

RESEARCH BOOKLET

Community-oriented Housing without Developers

Redevelopment project of Baithi Chawls
in Nalasopara, Mumbai

Global Housing Graduation Studio:
Mixing Mumbai.
Affordable Housing for Inclusive Development

"If adequate housing is not appearing in our cities it is sign that something wrong with the system. Our job is to understand the malfunction and try to set it right. Instead, we immediately start to design housing. Why do we do this? Despite apparent good intentions, our attitude is really quite ugly. It seems that we want to believe that the poor do not have houses because of their ignorance; we have to show them how. This is easier on our conscience than the truth: they are homeless because are on the losing end of the system."

Charles Correa

CONTENT

Part One **Context**

1.	<i>Mumbai: Great City , Terrible Places</i>	9
	1.1 City historical growth	12
	1.2 One space, two worlds	14
	1.3 Bottom-up and Top-down urban strategy	16
2.	<i>Spatial and Cultural Patterns in Mumbai</i>	19
	2.1 Gathering places	20
	2.2 Street activities	30
	2.3 Architectural elements	34
3.	<i>Community in Mumbai</i>	37
	3.1 Old village's community structure	38
	3.2 Urban affordable housing's social space	42
	3.3 Communities with concept of home and belongings	46
4.	<i>Housing in Nala Sopara</i>	49
	4.1 Urban transformation	50
	4.2 Housing typology	56
	4.3 Housing affordability	66
	4.4 Housing policy for slum redevelopment	70

Part Two **Research**

1.	<i>Introduction: Problem statement and research question</i>	74
	1.1 Housing system for the urban poor	74
	1.2 Self-growing communities	78
2.	<i>Building Group Model as a housing solution without developers</i>	80
	2.1 Case study of architecture without developers	82
	2.2 Building Group Model system	88
3.	<i>Building Group Model as a community strategy for the urban poor</i>	91
	3.1 From the chawl communities to building-group communities	91
	3.2 Old village as a size standard for building up group	96

Part One

Context



1. Mumbai: Great City , Terrible Places

*"For a city can be beautiful as physical habitat - with trees, uncrowded roads, open spaces - and yet fail to provide that particular, ineffable quality of urbanity which we call "city". We all know examples of this. Bombay, of course, illustrates the very oposite. Every day it gets worse and worse as physical environment... and yet better and better as "city". That is to say, everyday, on every level of society - from squatter to college student to entrepreneur to artist - it offers more in the way of skills, activities and opportunities."*¹

While these informal settlements and disordered open markets in Mumbai city may not fit the current image of process, their messiness do have something to offer designers. Urban theorist Jane Jacobs argued that under a city's messiness there is a hidden order that contributes to the streets and neighborhoods' vitality. City-building is more than just having an iconic skyline.

Design is not just about creating new things or spaces, but also finding and giving meaning. It is also to find ways to articulate the everyday situations of cities, and sometimes these situations can be very messy.

As architects, we need to better understand how messiness contributes to vitality and understand the logic behind it. We designers can even learn from it, such as the locals' survival tactics and spatial strategies to act resiliently against and along rapid urbanization.



City scenes in Mumbai

Land Reclamation



42 sq km

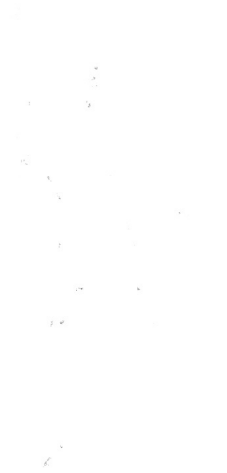


67 sq km



456 sq km

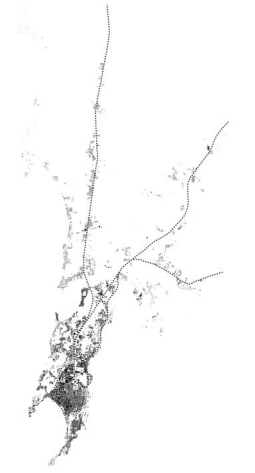
Urban Fabric



0.1 million



0.5 million



1.2 million

Informal Settlements



603 sq km



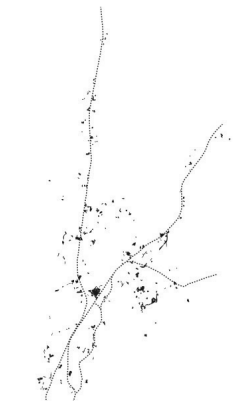
619 sq km



4.5 million



13.8 million





Big gap between the rich and the poor

"Bombay always evolved in a dualistic way, the city was never built in a singular image. The meaning of 'Two worlds' not only means the economic difference between the rich and the poor, but also represents multiple dualities in other aspects like lifestyles, cultural attitudes, planned interventions versus incremental growth, big moves versus small gestures, passive versus active interventions, governmental action versus private initiative, the ¹⁴pukka versus the kutchra city, etc. In other words, the opposite forces of two worlds shape one space - Bombay."²



Spacious high-rise residence in the city



Self-built slums along the transport line



The rich's comfortable lifestyles



The poor's struggle for life



Organized big malls



Disordered street markets

Singapore, Top-down strategy



- Clear urban planning
- Low-density & high-rise apartments
- Large public open spaces

Old Delhi, Bottom-up strategy



- Self-growing city
- High-density & low-rise small housing
- Small courtyards for each families as fractions of city's public space



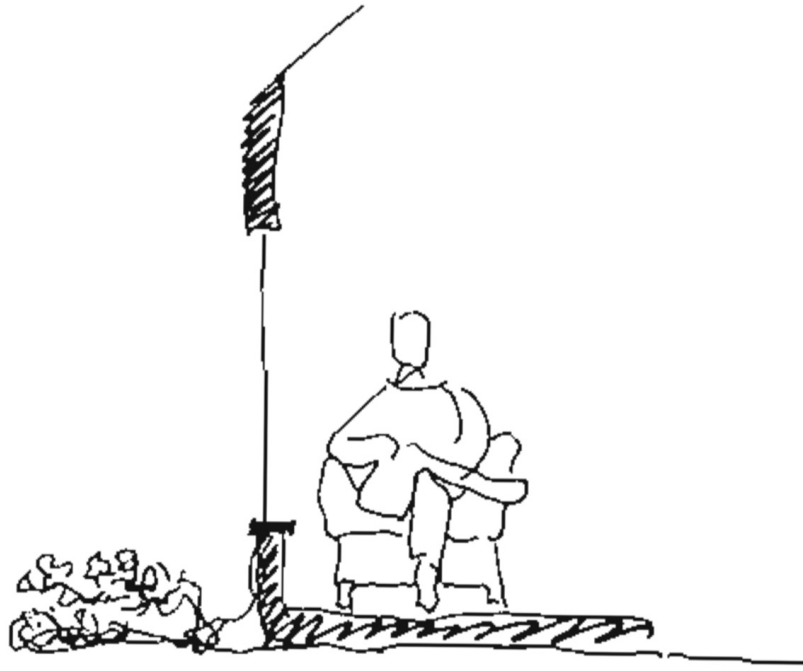
The opposite forces of two strategy shape one space: Mumbai

In the past, most physical development in the city was brought about by private wealth and enterprises. In the absence of scalable private and government housing initiatives, over 60 percent of the city's urban poor live in settlements where units have been self-constructed.³



Small housing units in old Delhi

Identifying the popular elements and patterns is the first step towards understanding the bottom-up mechanisms that produce urban environments.

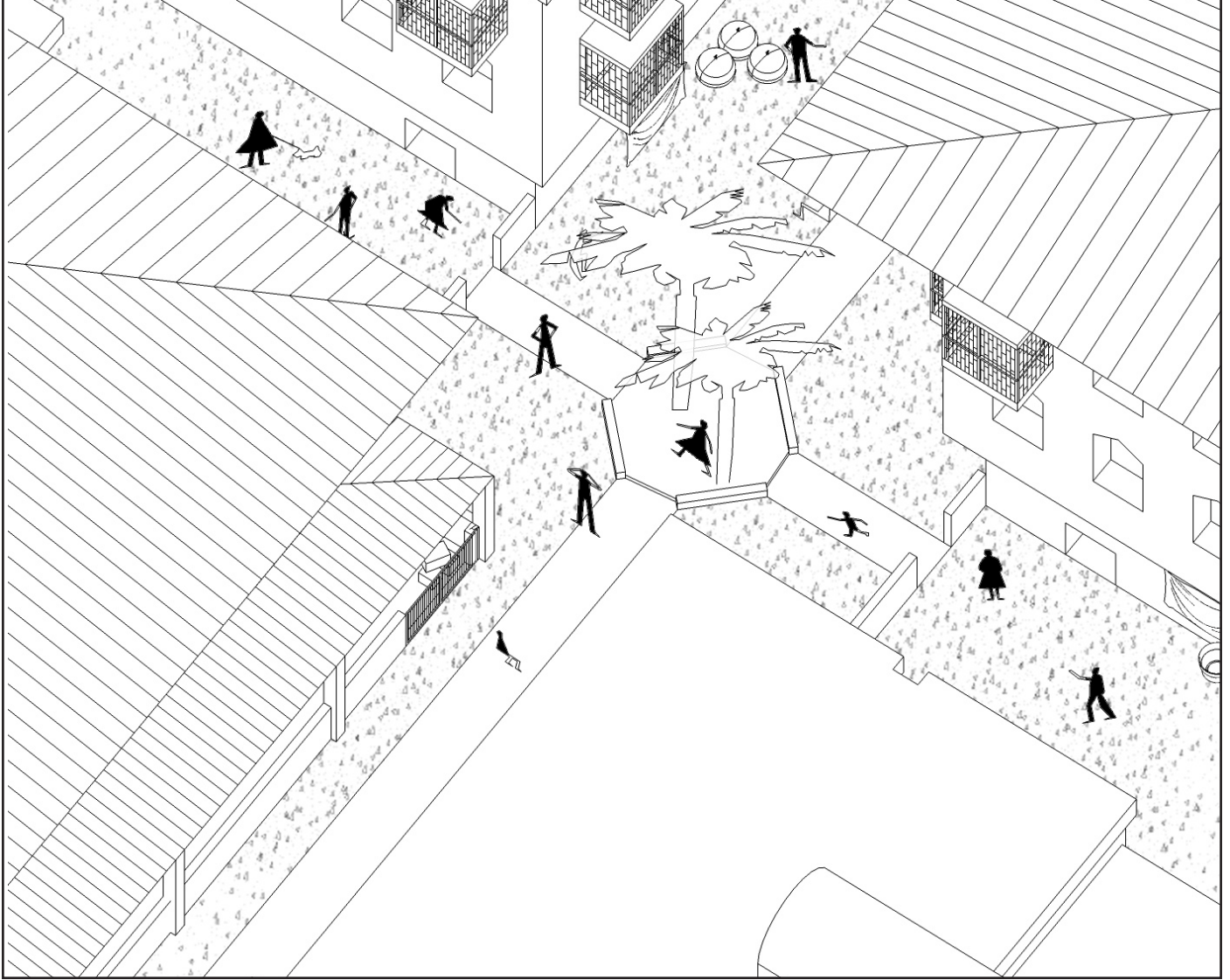


2. Spatial and Cultural Patterns in Mumbai

A definition:

Popular architecture of Mumbai exists in both informal and formal contexts; its influences ranges from developer architecture and self-built. This combination of elements is unified by its ability to shape the contemporar urban environment of Mumbai.

It is a reference manual for designing ¹⁹vernacular architecture in Mumbai, in respect to *Gathering places, Street activities and Architectural elements.*



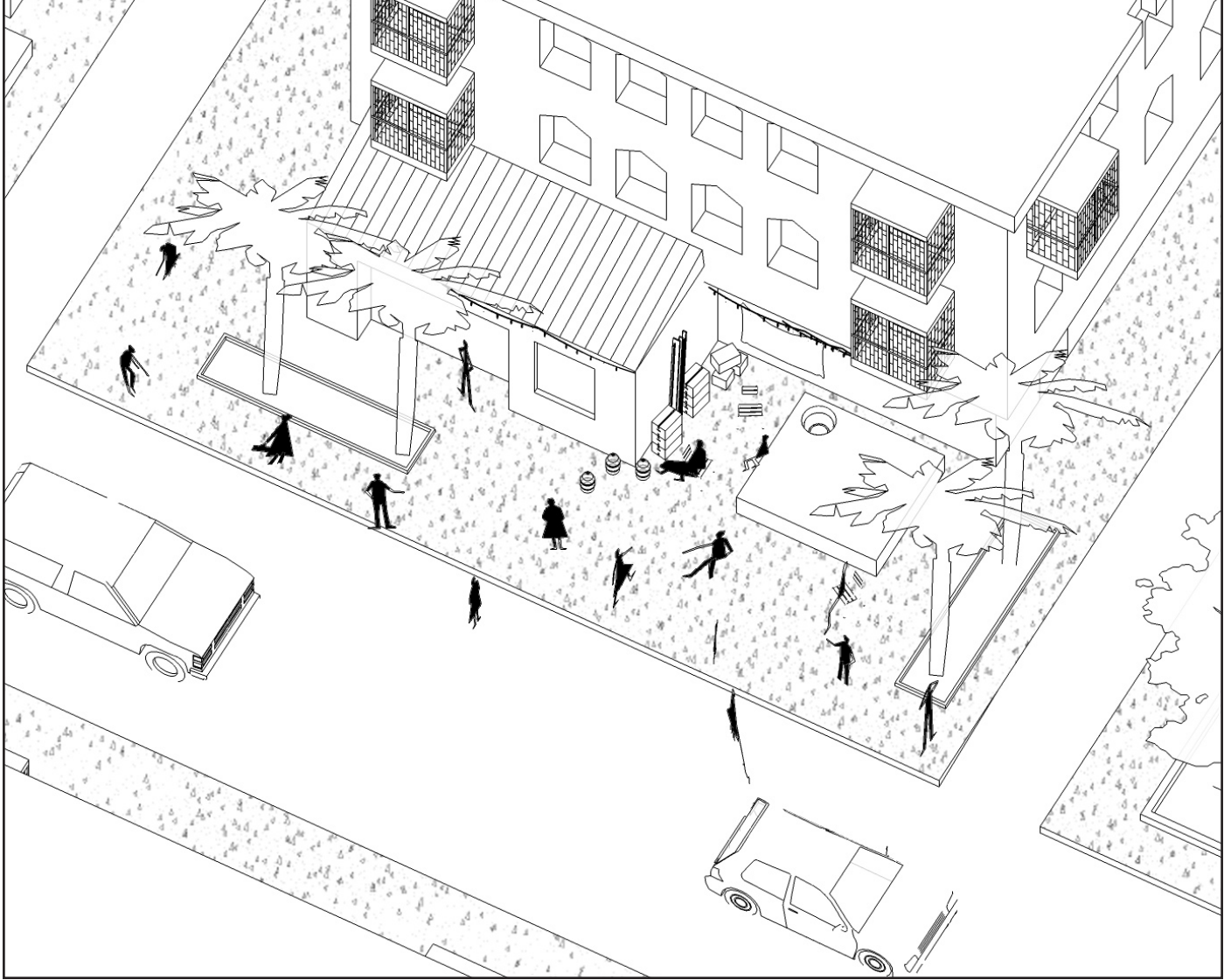
Gathering places: Cross-shaped space between buildings

The Shri Prastha area has many of the same buildings organised in a grid.

The points where those grids come together function as a social space.

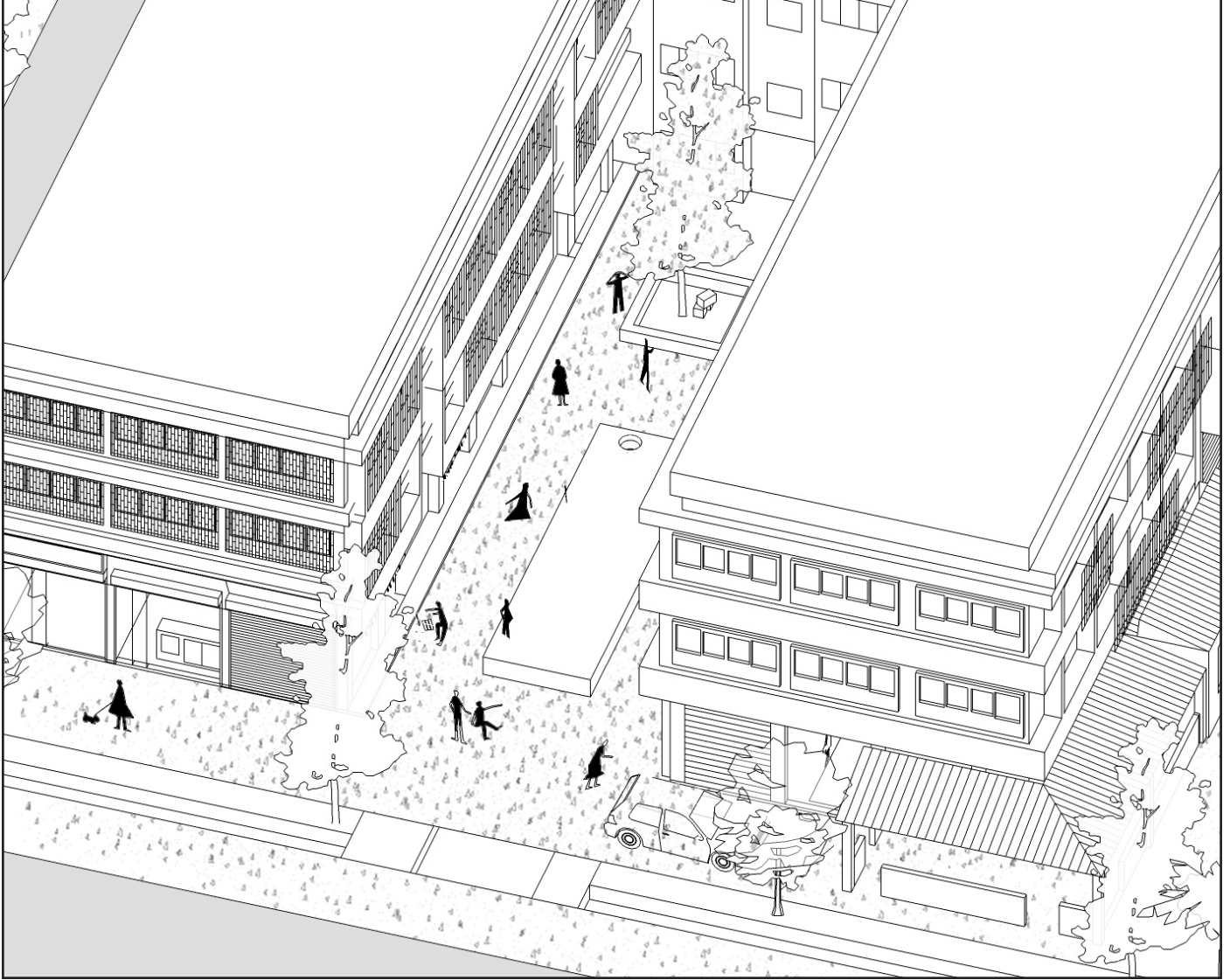
These social spaces are always surrounded by four buildings.

People from the surrounding buildings come together in these created spaces.



Gathering places: Space in front of the entrance

The ground floor dwellings of the buildings have their entrances and windows oriented to the main streets, and not to the community space² located in between the buildings. Because of this open connection between the dwelling and the main street, the inhabitants of the dwelling gather in front of their own dwelling, and it functions as a social space to meet with their neighbours

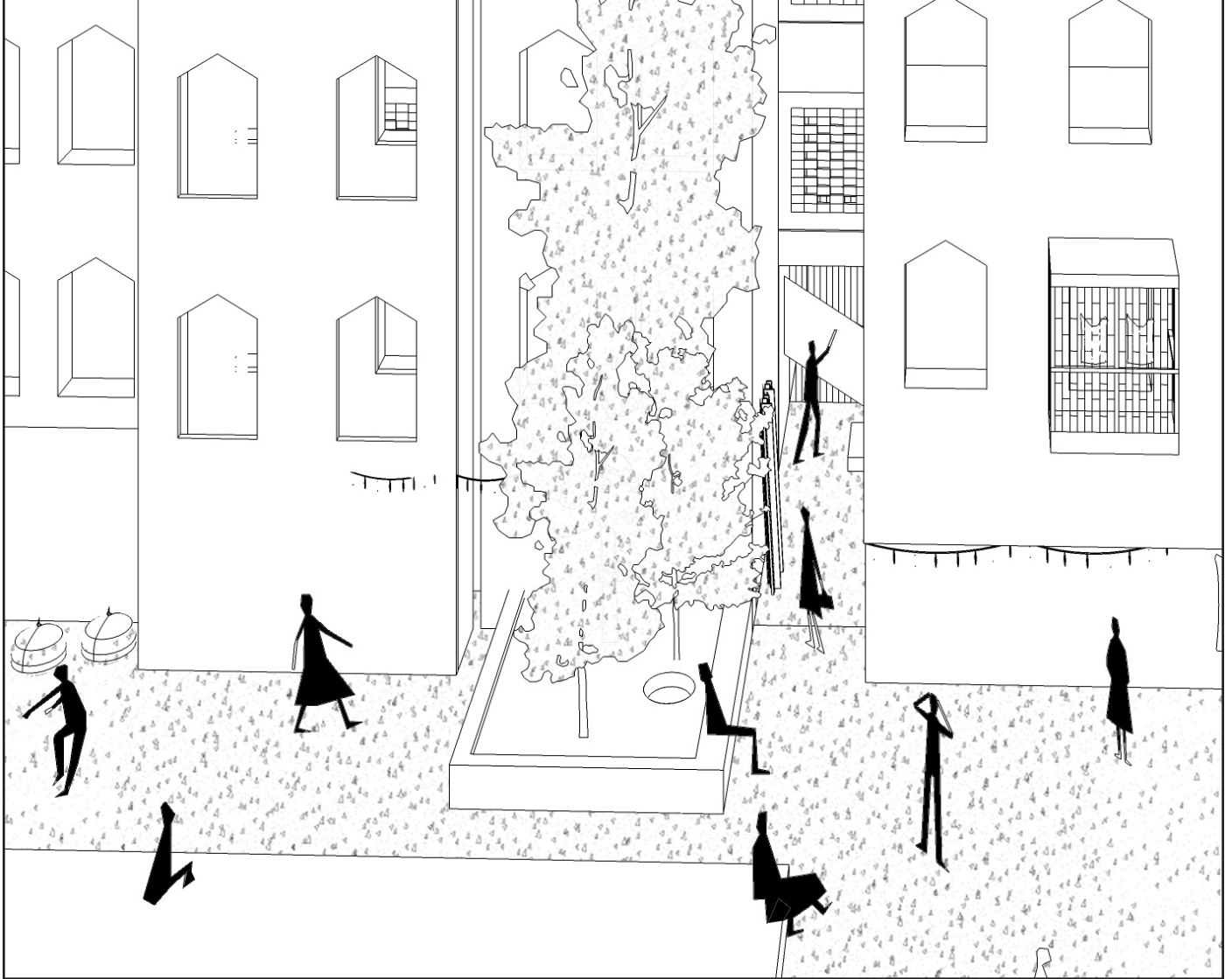


Gathering places: Courtyard space

Courtyard space in between the buildings locates the entrances of the building, and to place the water tank for the water reserve.

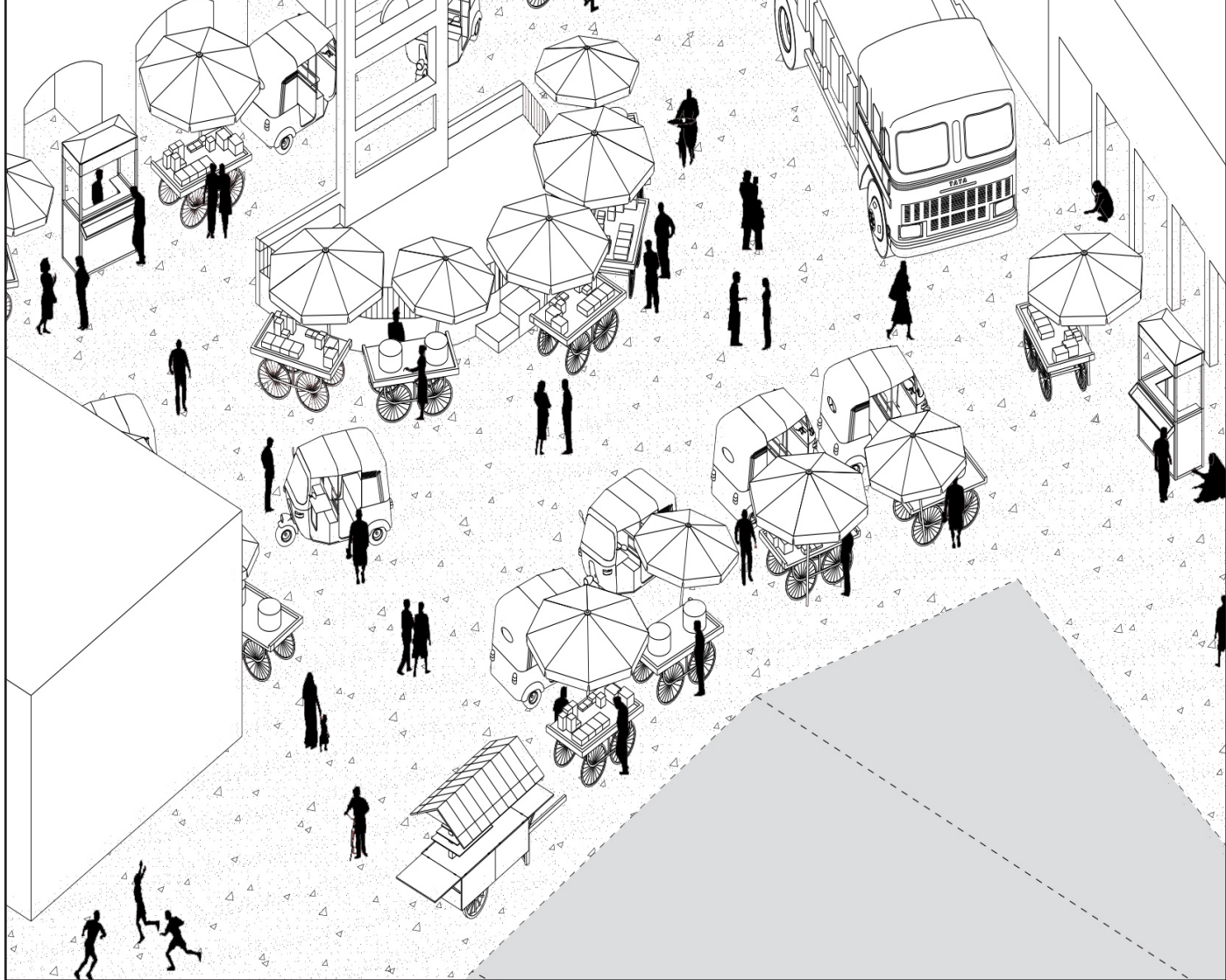
The water tank doesn't ²²only function to store water but is also as a meeting point for the neighbours or visitors.

The area surrounding the water tank functions as a community space.



Gathering places: Area in front of staircases

The entrances with staircases of the building are located in the community space between two buildings. The inhabitants of the building enter and leave their building in this point. This makes the area functioning as a meeting place between the different inhabitants.



Gathering places: The open market

The market area is the most central place in the village.

In a place where both Hindu's and Muslims live,
it is both the physical and mental interconnection between the two population groups.

It is the most important place for social interaction between the villagers.

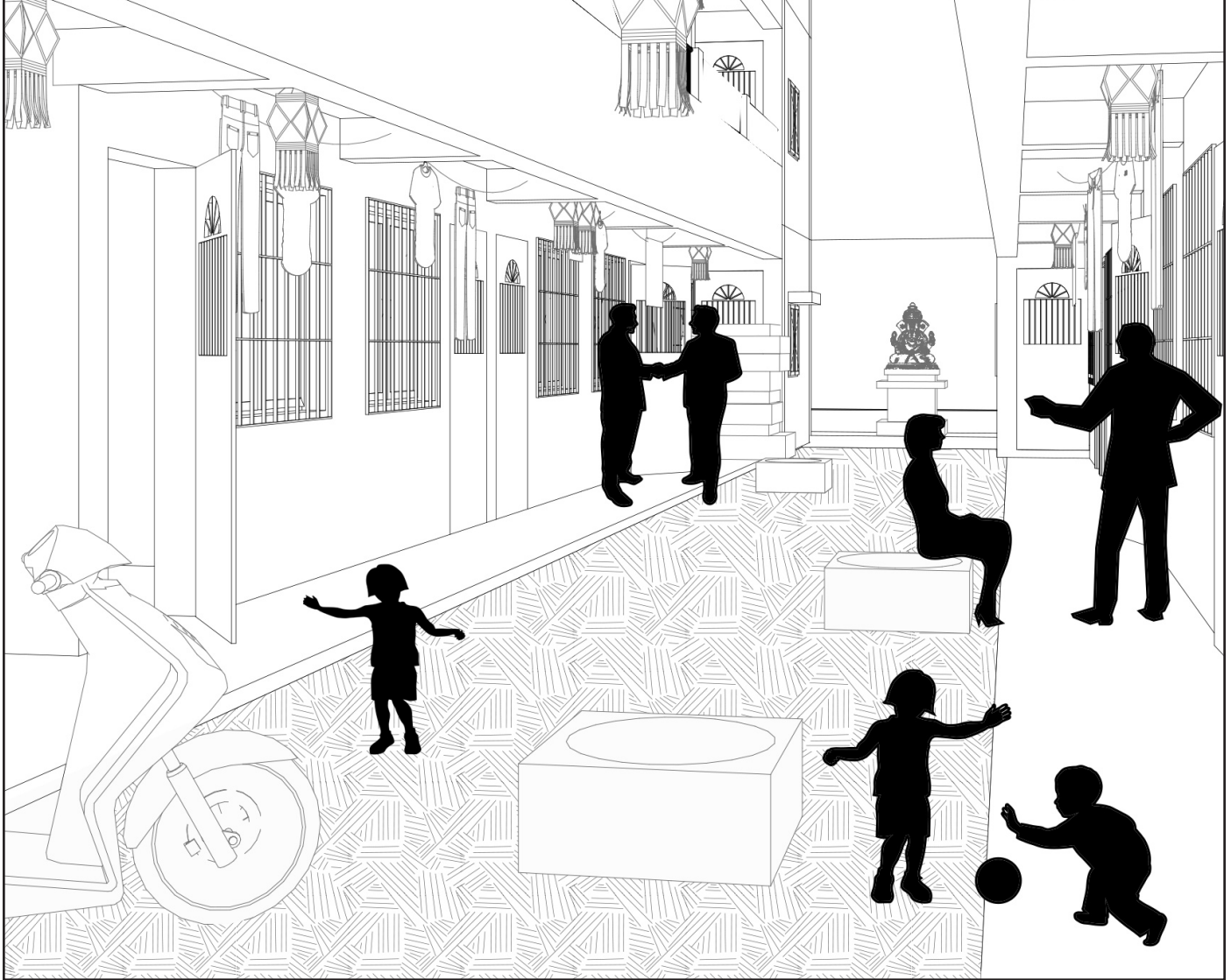
In the morning, the square is crowded with people and market vendors.

In the afternoon, this place becomes quieter



Gathering places: Holy tree

Holy trees functions as islands of peace in the hectic everyday life. People stop for a moment of worship before going on with their day.



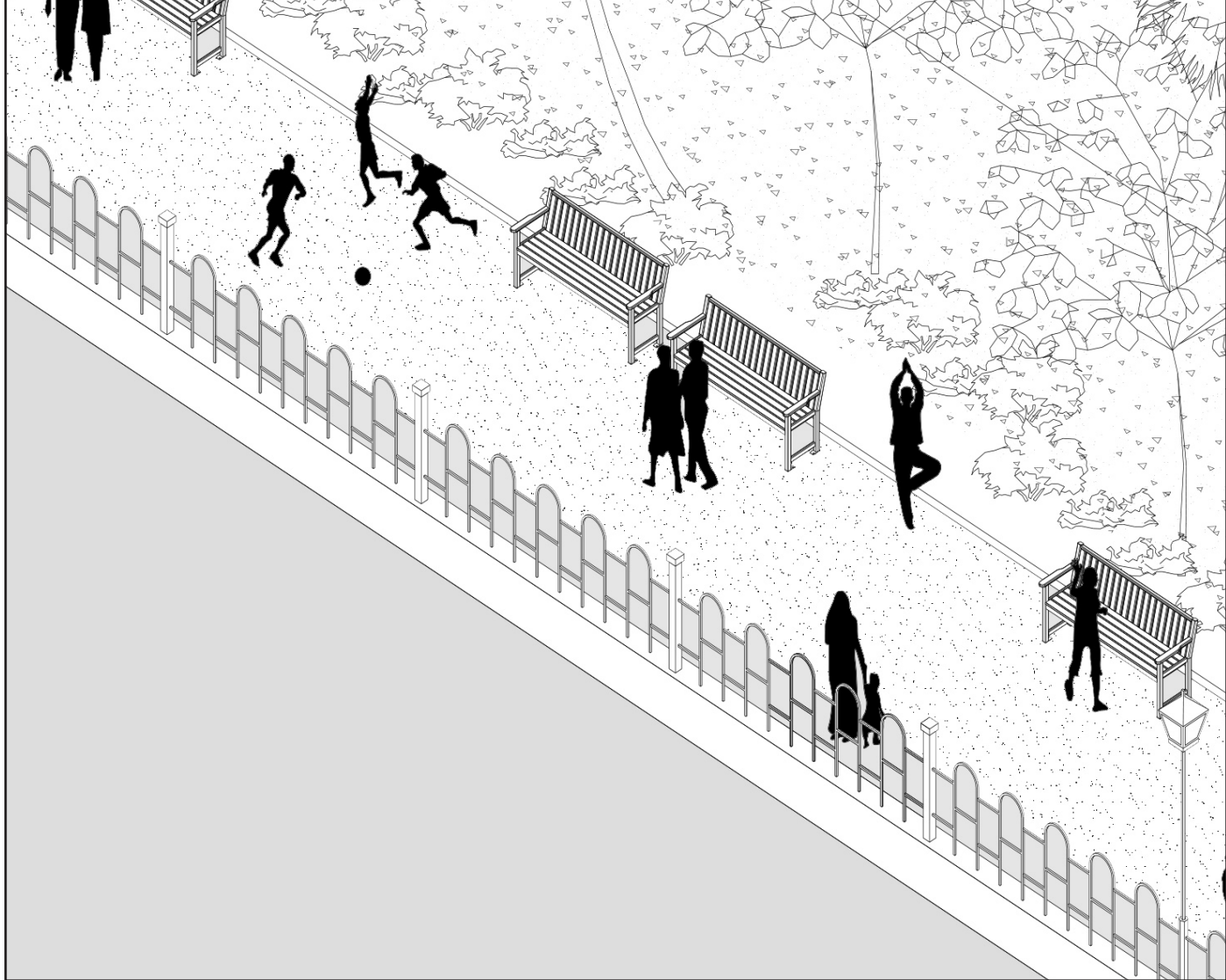
Gathering places: Front alley

The front alleys are gathering places for all the people from the adjacent buildings. This is where everybody crosses each other when arriving home; where people stop for a moment to chat.



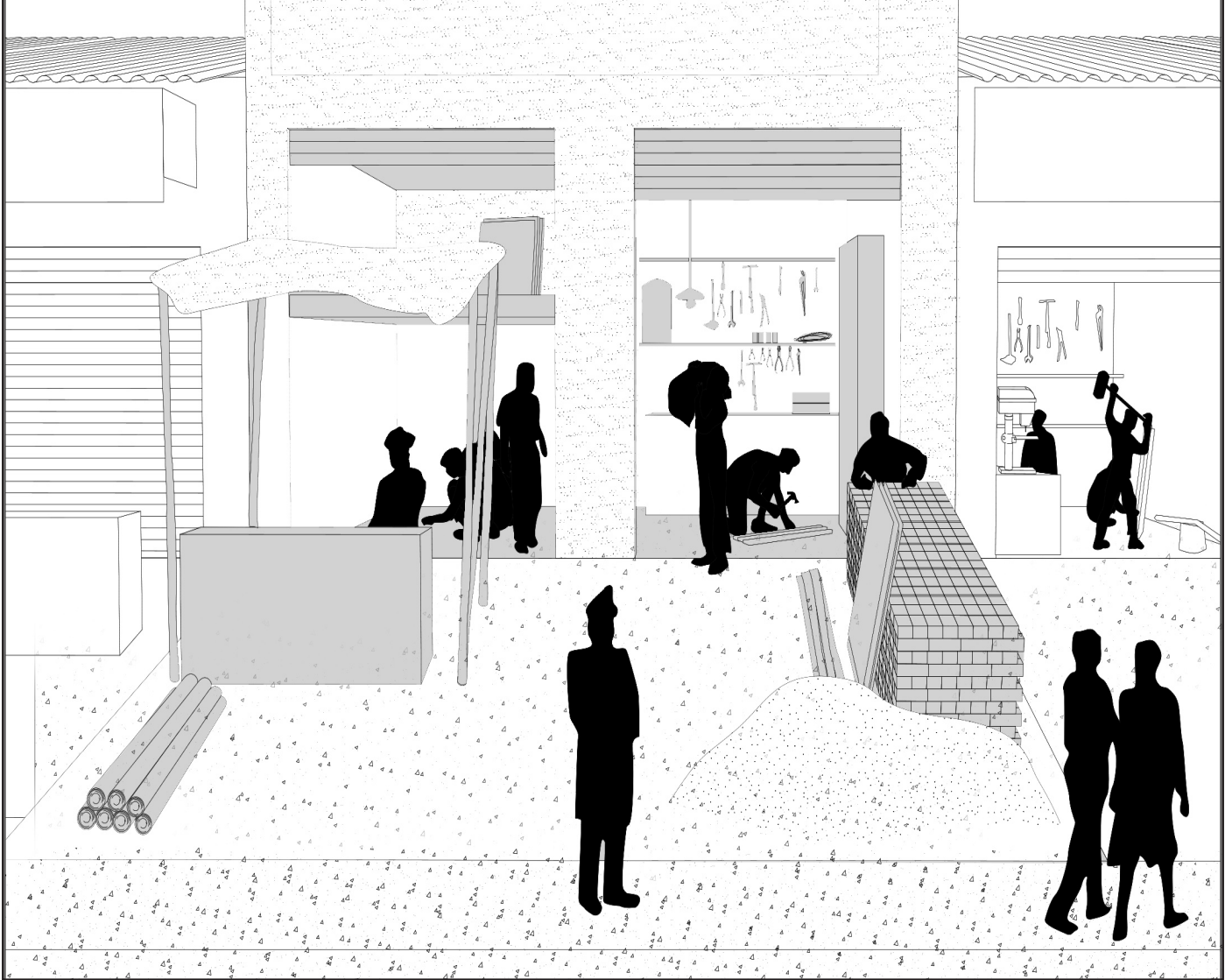
Gathering places: Circulation gallery

The galleries functions as extensions of the homes.
A meeting place where women chat while hanging the laundry to dry it
and where kids run around and play.



Gathering places: The lakeside

The lake represents an important symbol in the village. In former times, fresh water was taken from the lake, it symbolizes a source of life. Nowadays, the lake functions mainly as a social gathering space.



Gathering places: Space in front of the entrance

The highway coming from Mumbai offers a vital artery for various industrial activities taking place in the area of Nala Sopara East. These activities are held in workshops of various sizes close to the highway and along the main road crossing the area.



Sheep cart



Tricycle



Motorbike



Rickshaw



Water supply



Carry goods



Sun clothes



Cook meals



Fried rice



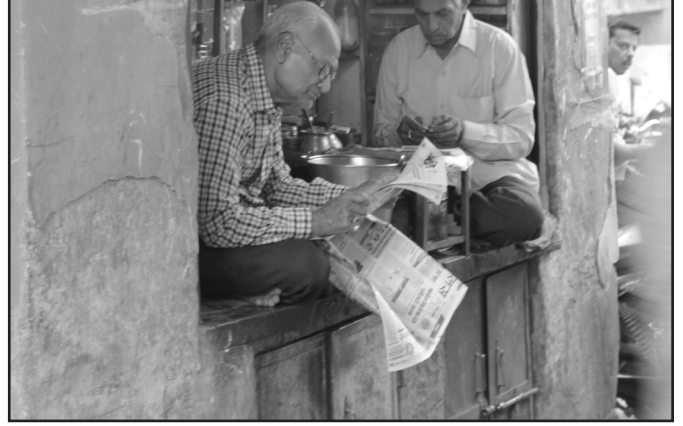
Fresh vegetable



Fresh fruit



Fruit beverage





Architectural elements:

Elevated entrance / A soft definition of limits



Architectural elements:

Steel roof extension / As a solution to make the building water proof.



Architectural elements:

Iron gates / Entrance and boundary of community



³⁴ *Architectural elements:*

Steel cages of windows / Extension for sun clothes



Architectural elements:

Hollow-out window / Raise natural draft and lighting, spare fuel.



Architectural elements:

Outside stairs to first floor / Make the first floor units independent to units of the ground floor.



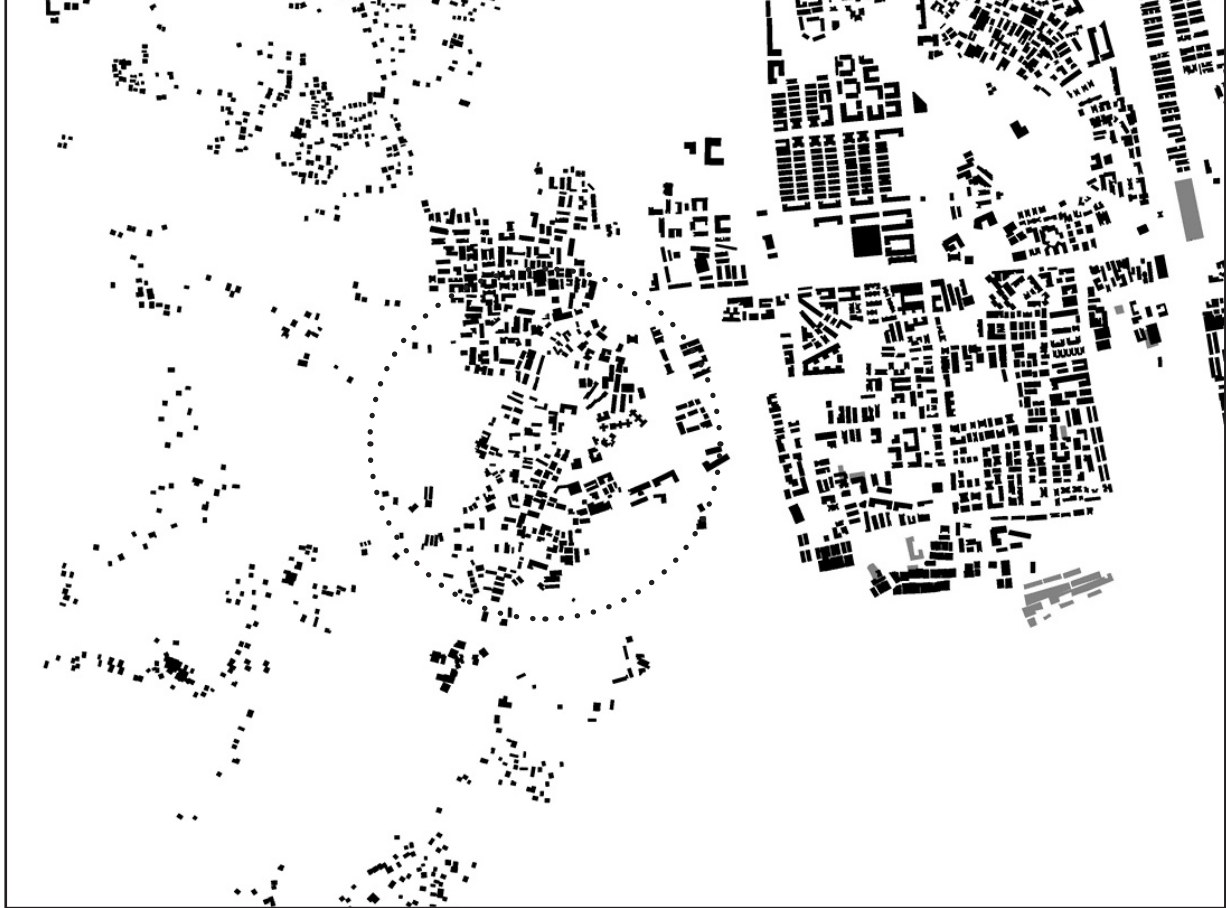
Architectural elements:

Upper floors' outside corridor / Sun protection and



³⁵ *Architectural elements:*

Bucket garden / Create green space for each



○ Sopara's old village

3. *Communities in Mumbai*

The community is not like a club which has both a clear institutional framework, regulations, and rules, instead it is more open and tolerant and it grows naturally and gradually in an appropriate context.

In the Indian's village environment there is always space to meet and talk, to cook, to wash clothes. There is always a place for the children to play.⁴

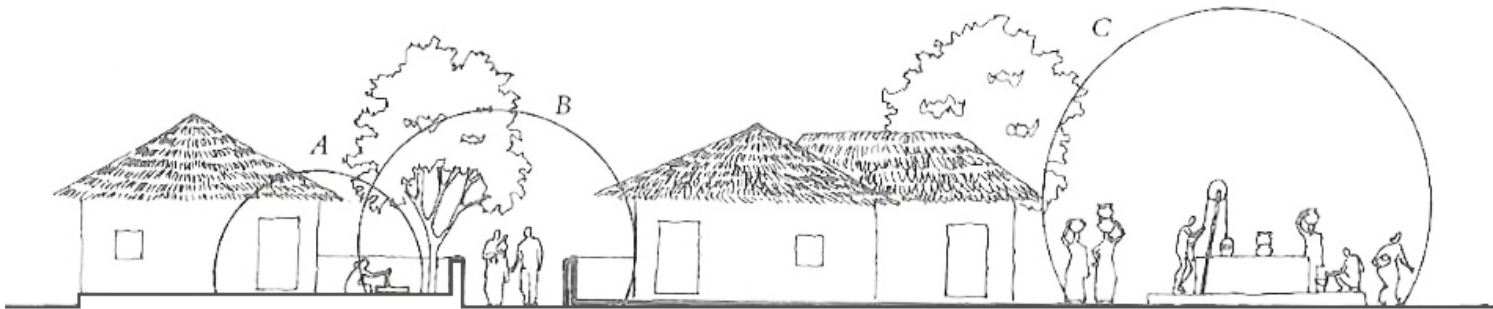
The structure of the community is generally hierarchal.
It appears to have four elements:

A: Courtyard

Space needed by the family for private use, such as cooking, sleeping and storage.

B: Doorstep

Areas of intimate contact, where children play and adults chats with their neighbours.



A: Courtyard

B: Doorstep

C: Water tap/Village well

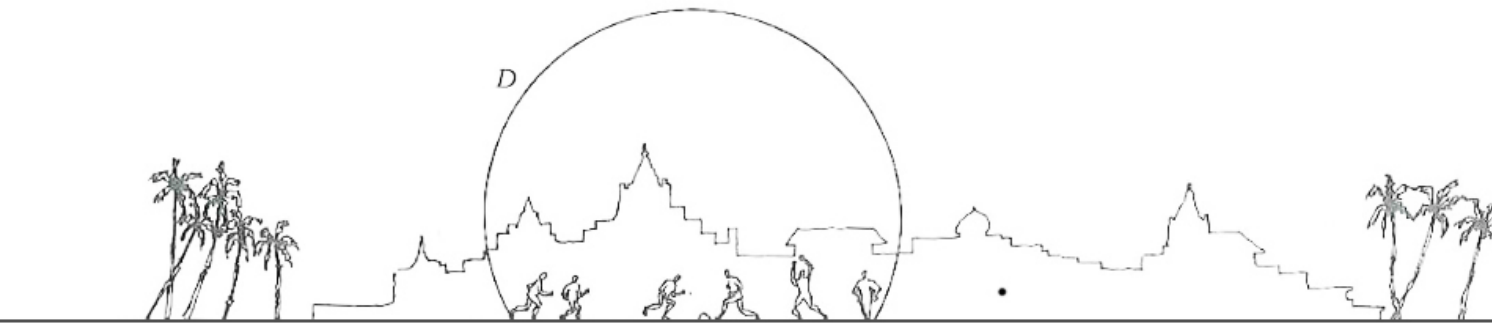
C: Water tap / Village well

Neighborhood meeting places, where people interact and become a part of community.

D: Maidan/ Market area

Used as community space for all villagers.

The hierachy of community space



D: Maidan

4



4



The self-growing village



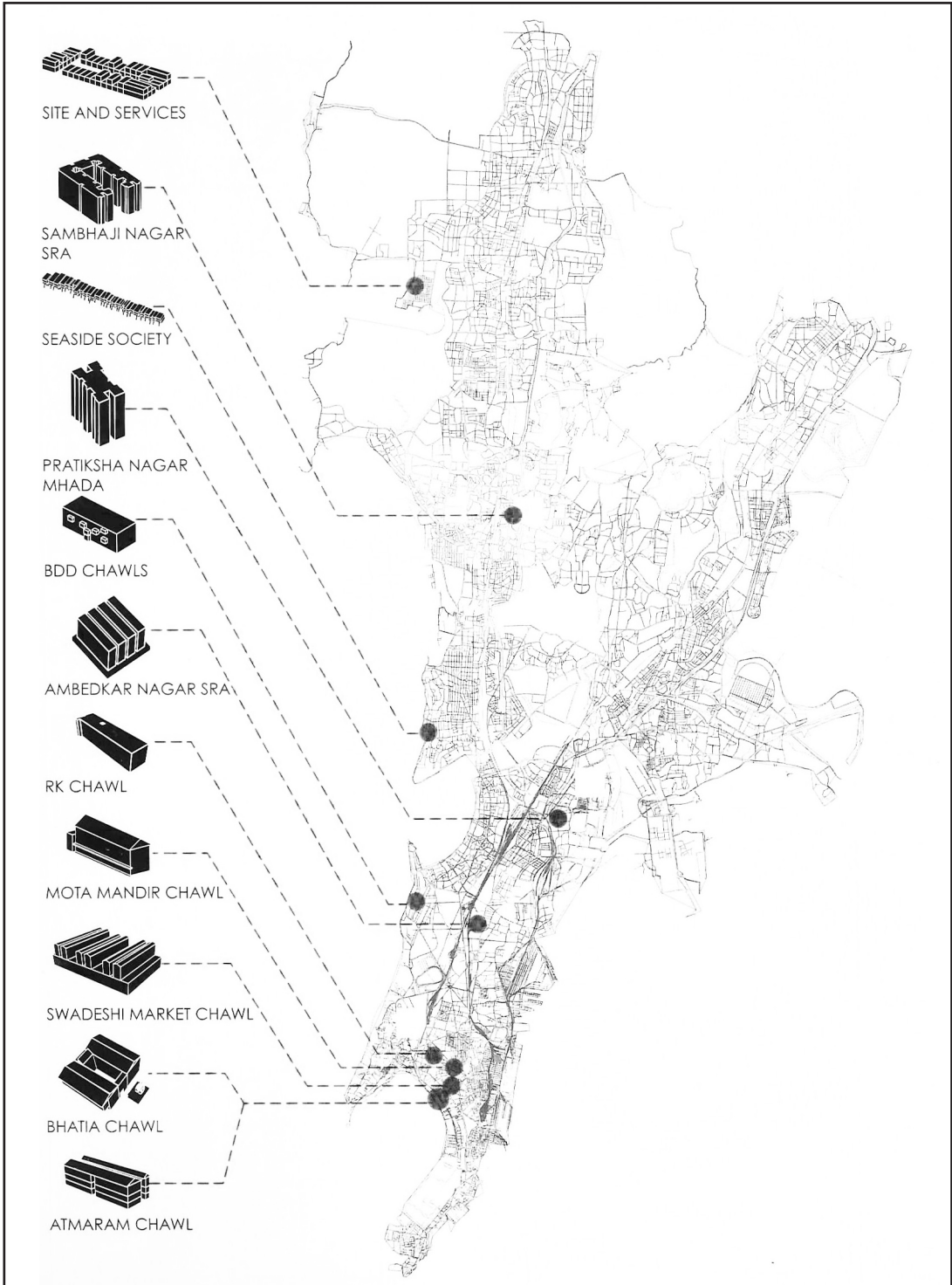
Residences developed along streets, the community with the courtyard started to appear.

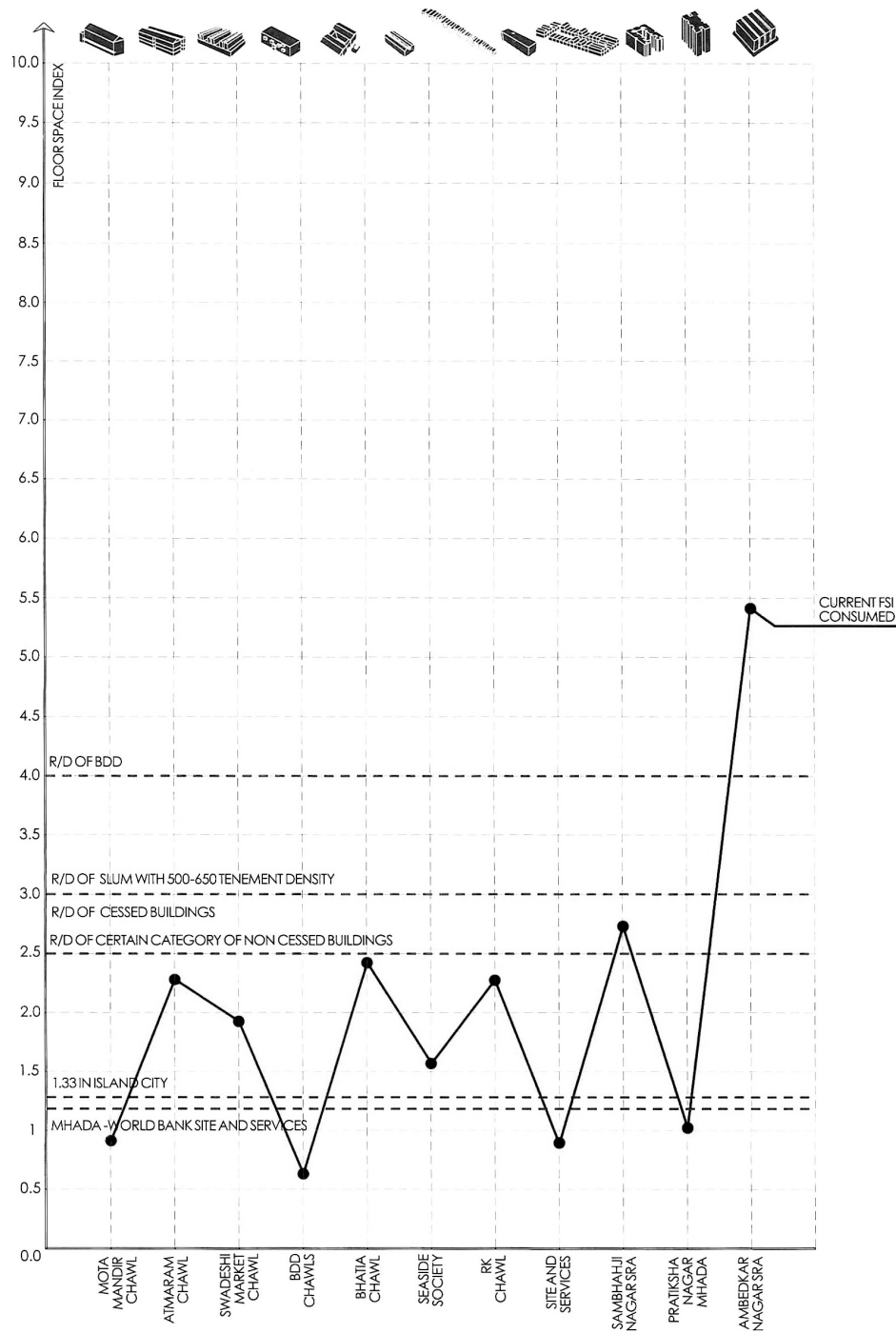


Small courtyard communities evolved to bigger communities with a bigger courtyard.



There is a maximum size of one community in Sopara's old village, the courtyard community can't grow bigger with the limit of the road network.





CURRENT FSI CONSUMED

FLOOR SPACE INDEX

R/D OF BDD

R/D OF SLUM WITH 500-650 TENEMENT DENSITY

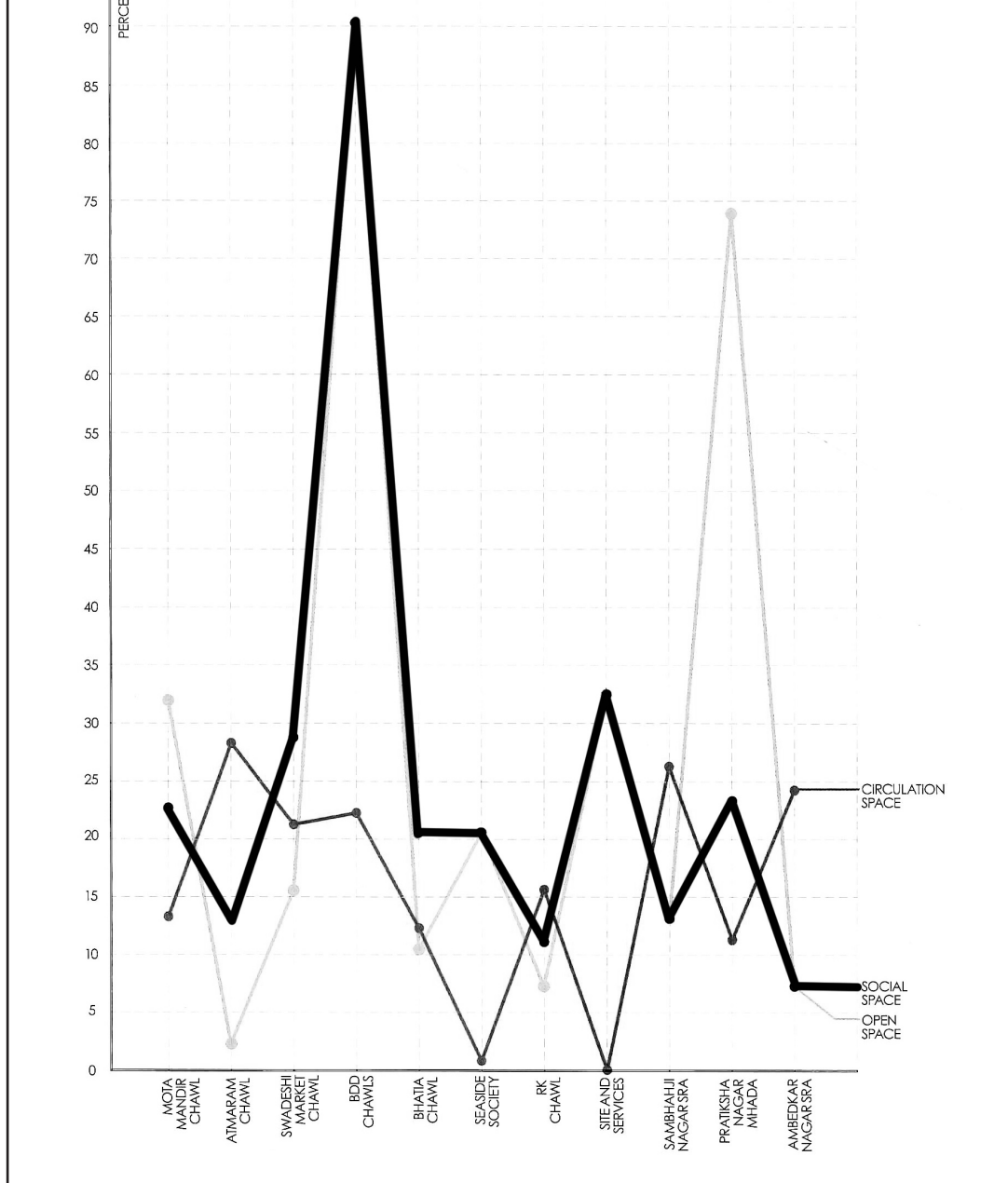
R/D OF CESSED BUILDINGS

R/D OF CERTAIN CATEGORY OF NON CESSED BUILDINGS

1.33 IN ISLAND CITY

MHADA - WORLD BANK SITE AND SERVICES

MOTA MANDIR CHAWL
 ATMARAM CHAWL
 SWADESHI MARKET CHAWL
 BDD CHAWLS
 BHATIA CHAWL
 SEASIDE SOCIETY
 BK CHAWL
 SITE AND SERVICES
 SAMBHAJUJI NAGAR SRA
 PRAKISHA NAGAR MHADA
 AMBEDKAR NAGAR SRA



Social space

Social space is a cumulative of spaces used for socialization between inhabitants outside the dwelling unit. In general, social space's percentage of built up area can be an evaluation standard for social interaction of

In terms of these affordable house projects, several conclusions can be given from the comparative analysis.

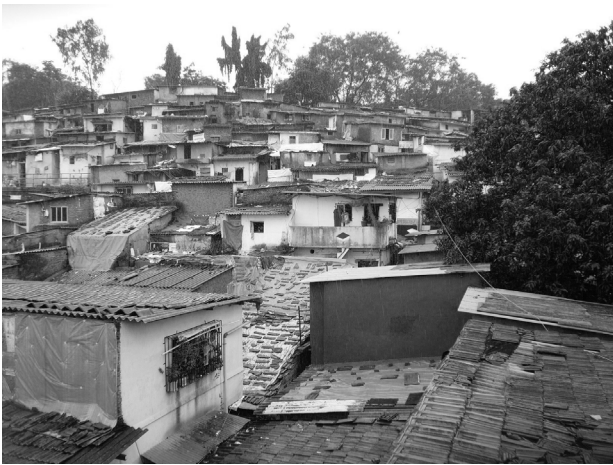
- 1. For low-rise housing, the more open space and circulation space, the increasing chance of social interaction happening between in habitants outside the dwelling units.*
- 2. For mid-rise and high-rise housing, a high ratio of open space can not guarantee high ratio of social space or relatively frequent social interaction between residents. The form of the open space matters.*
- 3. When the FSI is quite high, such as 5.6 in the project of Ambedkar Nagarspa, the social space is limited. Also high FSI will reduce social interaction.*
- 4. When the FSI is around the range from 0.8 to 2.8, there is no direct connection between FSI and level of social interaction.*

Documentary: Round Trip - from the city to the village



An immense number of families from Mumbai maintain two homes: a small crowded one in the city, as well as one they invest in, back in the village.

Traveling to the village is not an experience of going back, but simply of going forward, repeatedly and in a circular movement.⁶



Slums in Mumbai City



*A Homegrown Neighborhood
in Bhandup, Mumbai*

Their world evokes another narrative of imagined communities, where conceptions of home and belonging are extended beyond geographical limits.



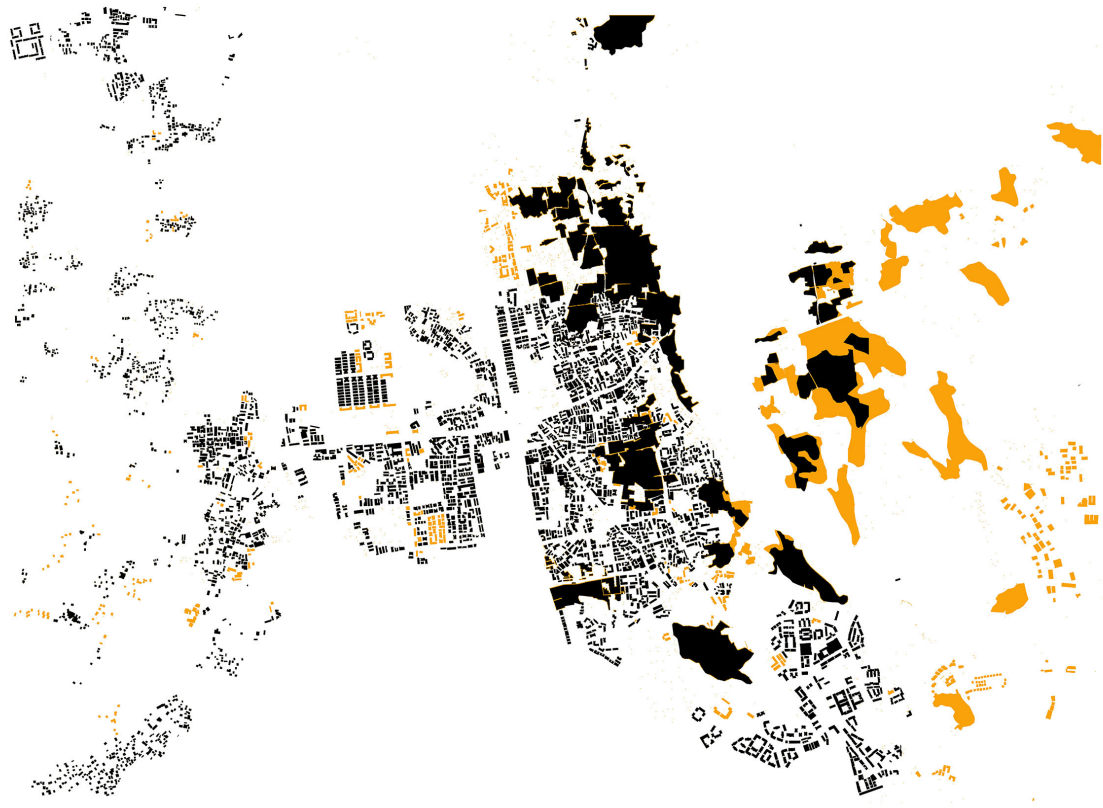
Urban fabric of Nala Sopara 2016

Nalasopara has a history going as far back as the Portugese colonial times rooted in the small villages surrounding the lakes. The last two decades the city is quickly developing as part of the metropolitan area of Mumbai.

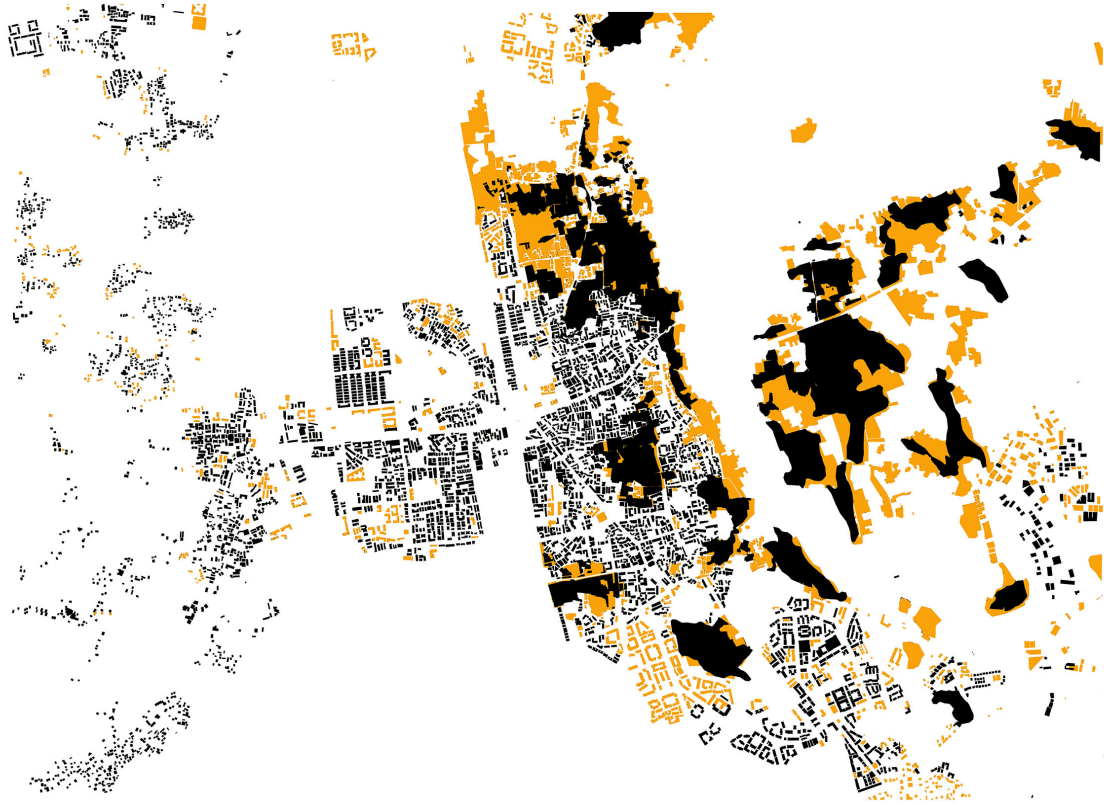
4. Housing in Nala Sopara



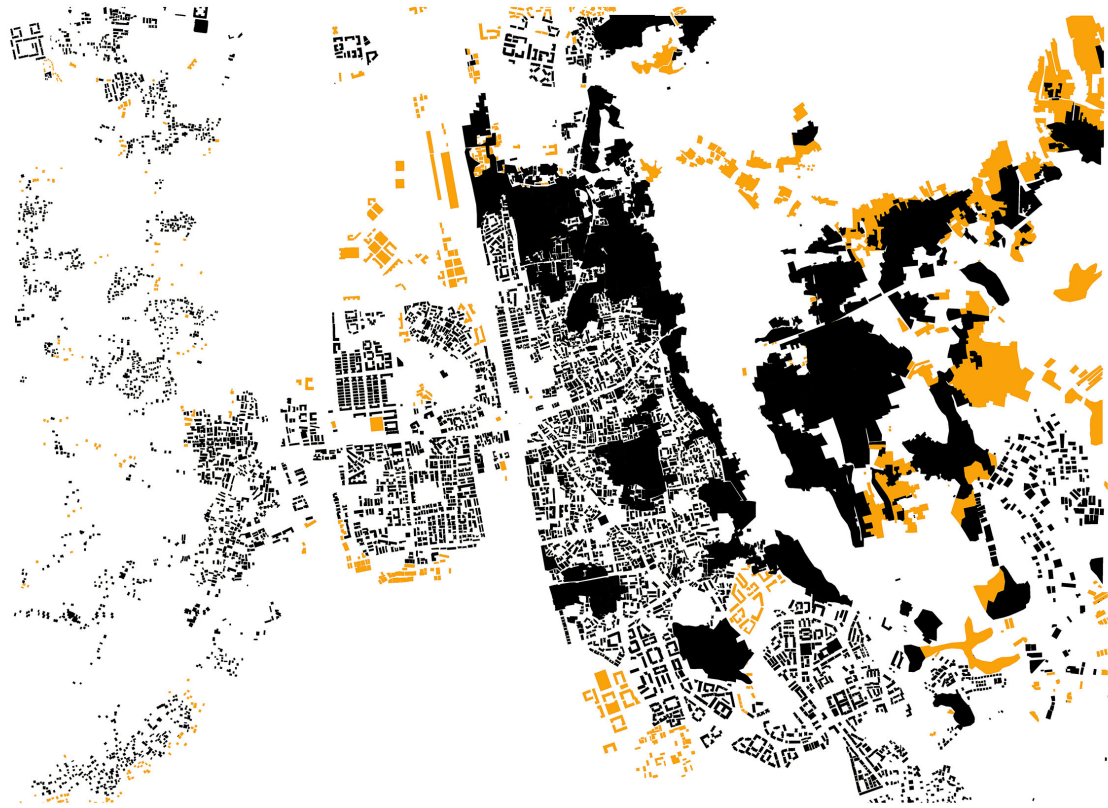
Existing buildings & slums
New buildings & slums



Existing buildings & slums
New buildings & slums



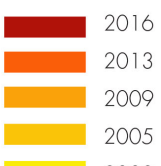
Existing buildings & slums
New buildings & slums

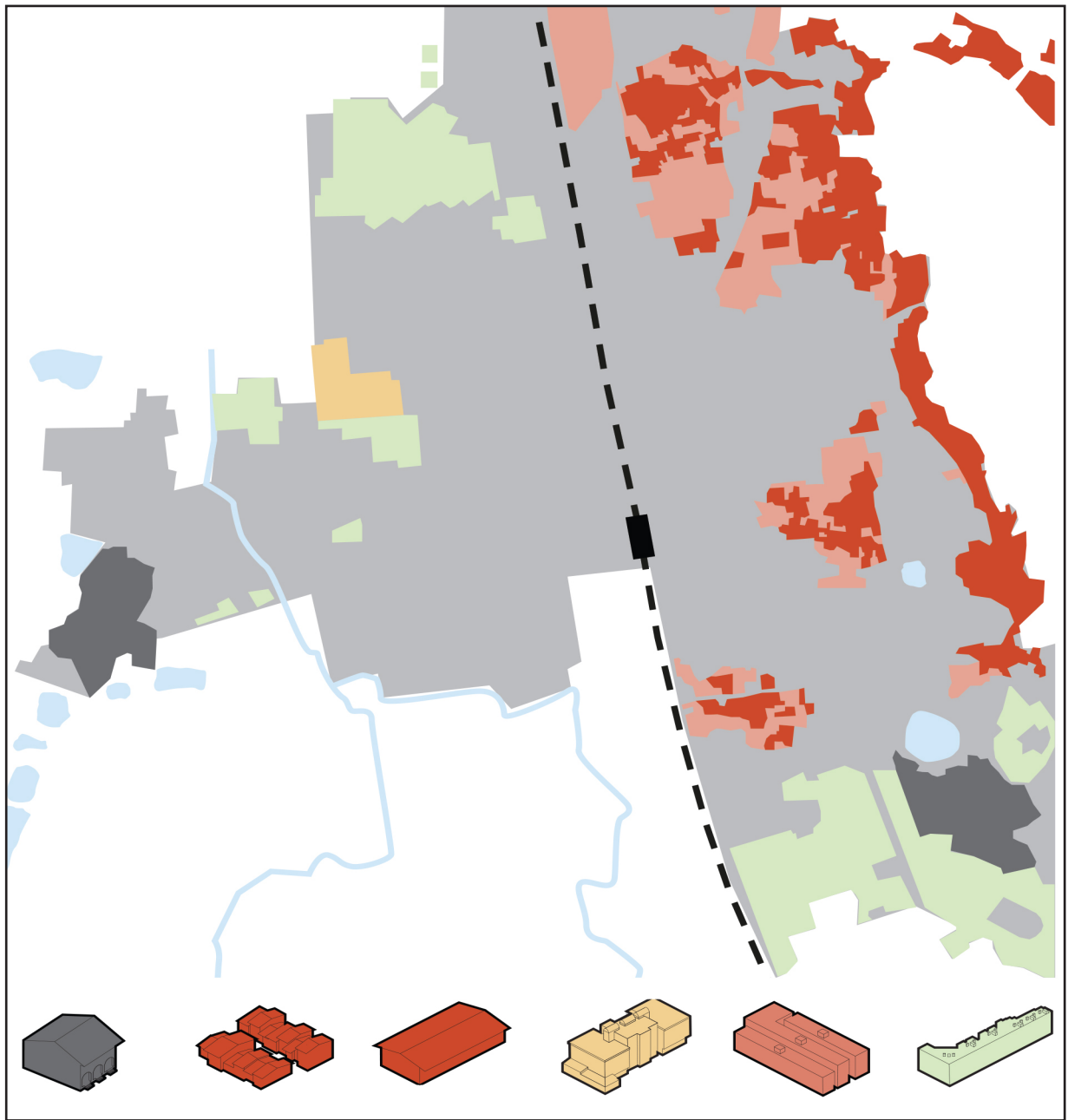


Existing buildings & slums
New buildings & slums



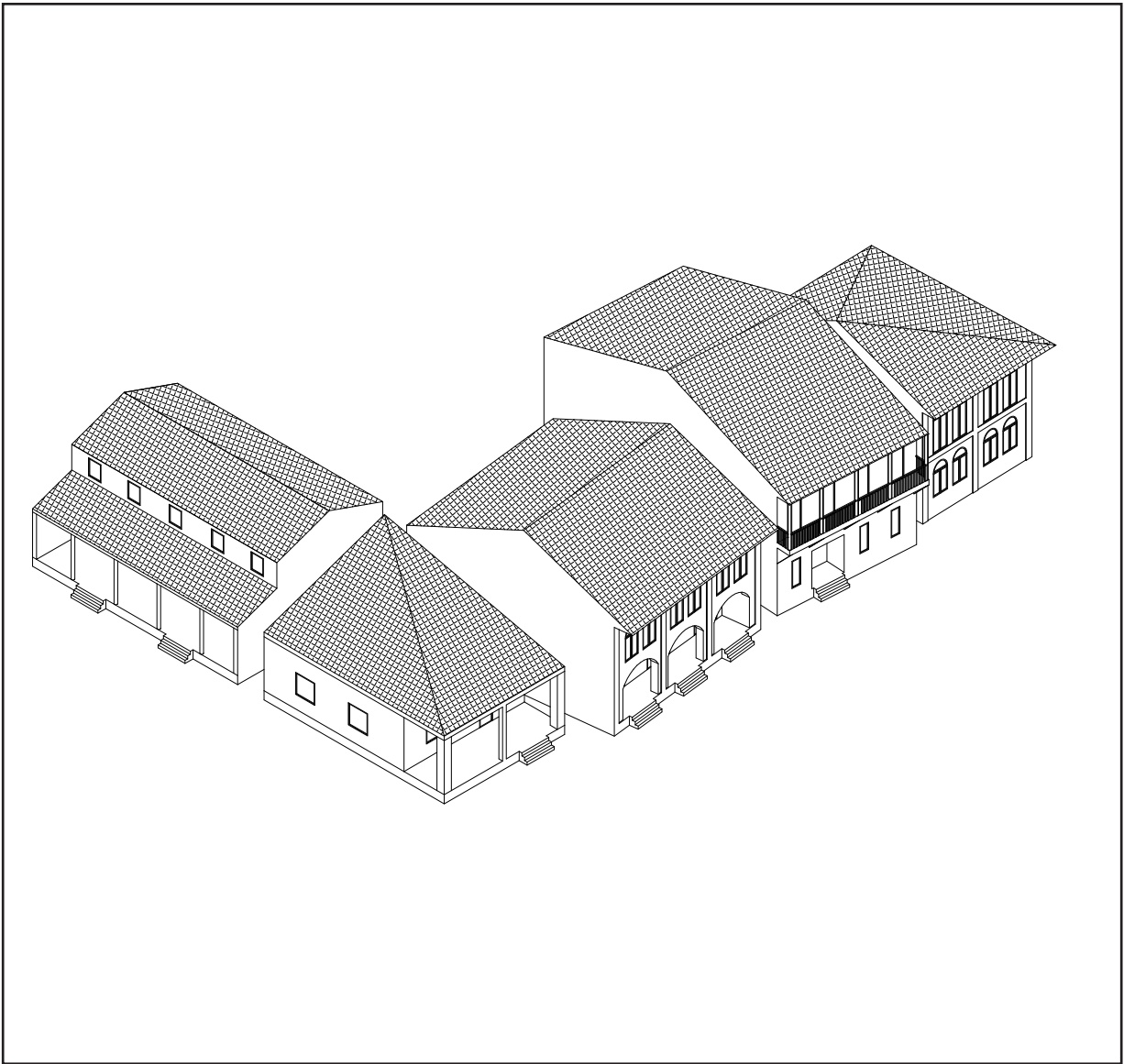
Existing buildings & slums
New buildings & slums



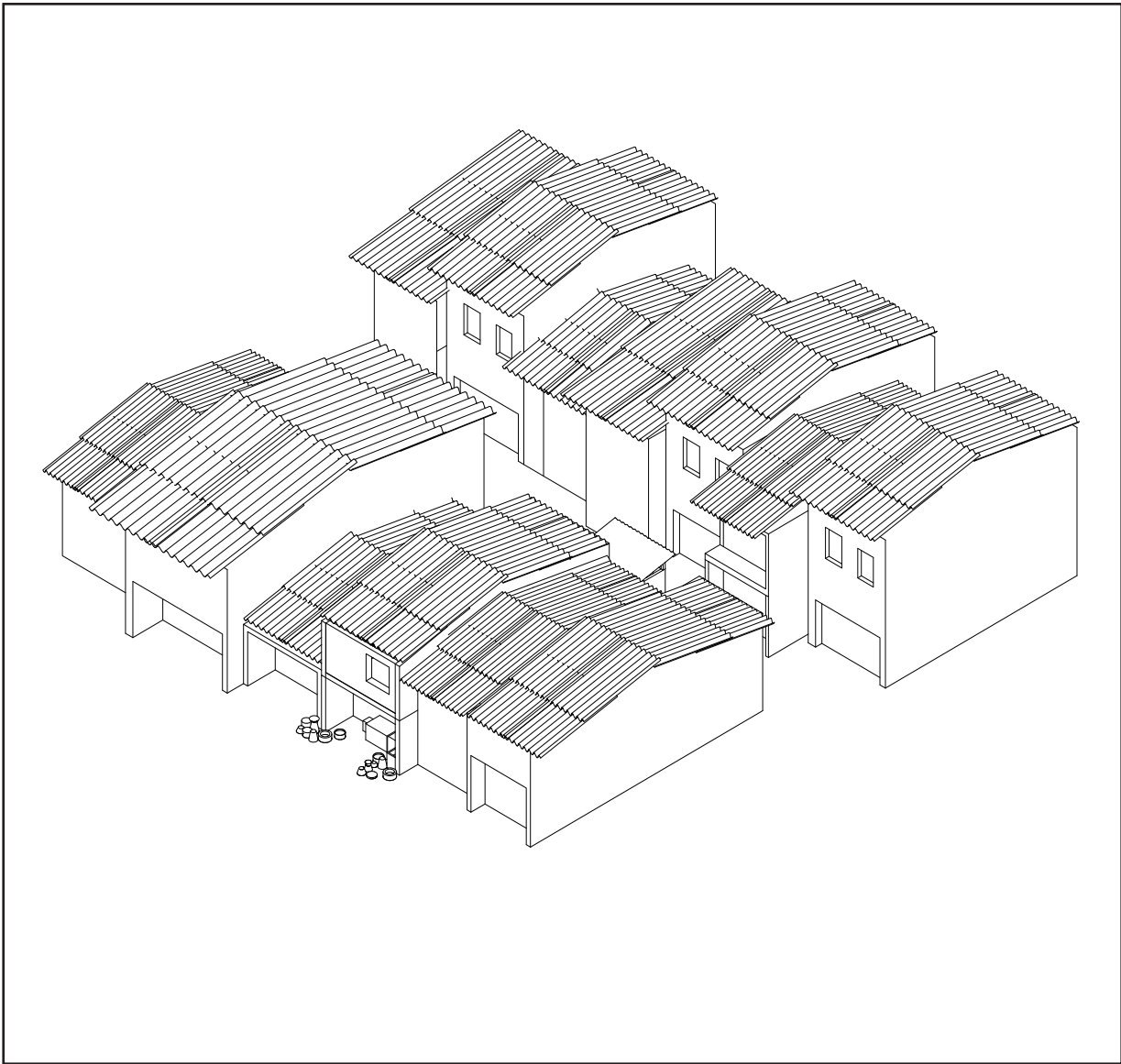


- Village house
- Slum settlements
- Baithi chawl
- Low rise apartment
- Slum rehabilitation chawl

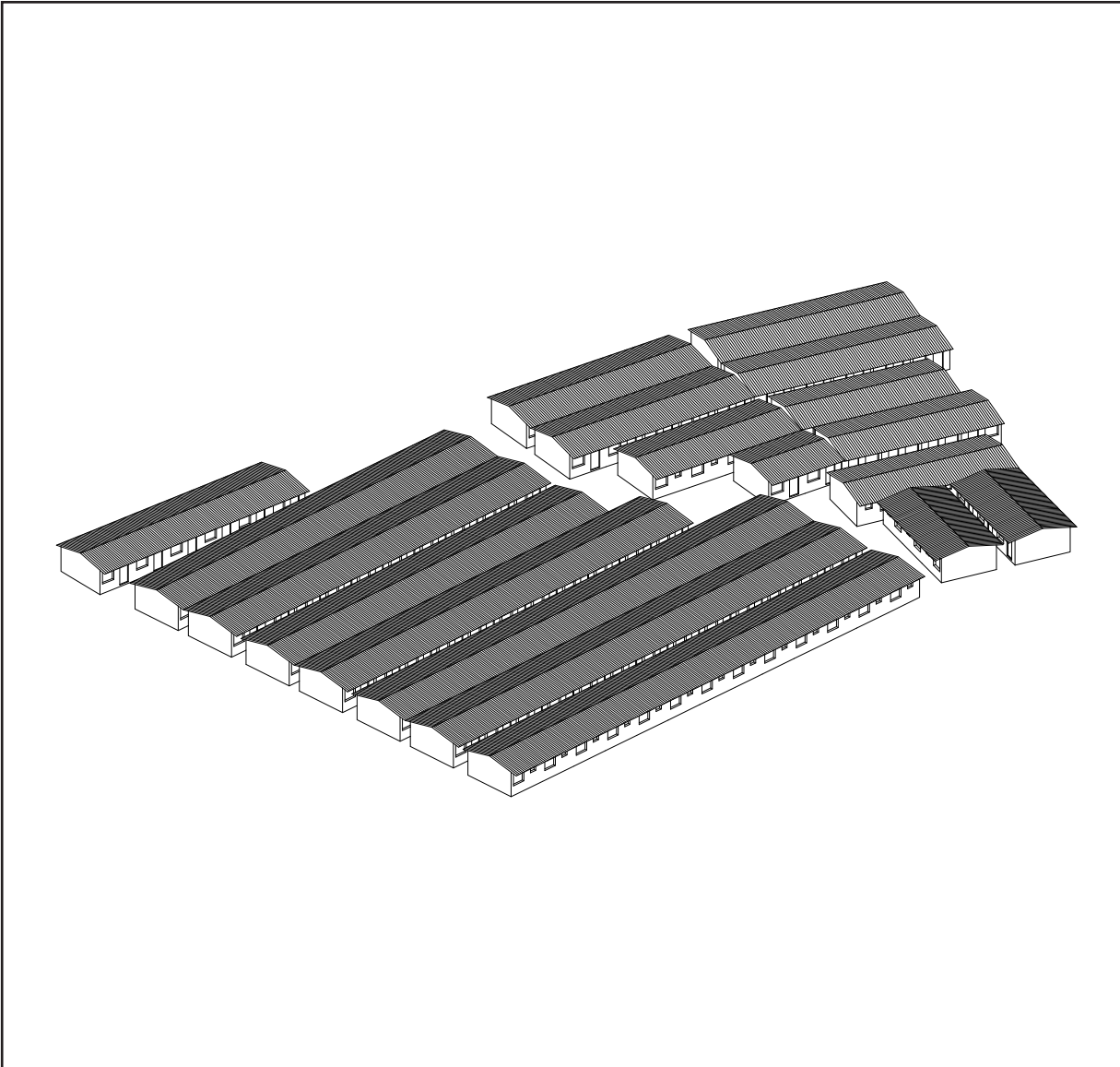
Six different types spread out over the whole area. The selection is based on the possibility to relate within one 'type' by typological aspects and elements, and on the other hand distinguish to the other housing. This goes from the scale of the urban fabric to the architectural element. The analysis is not complete due to a lack of information but still gives an understanding of Nalasoparas housing and architectural culture.



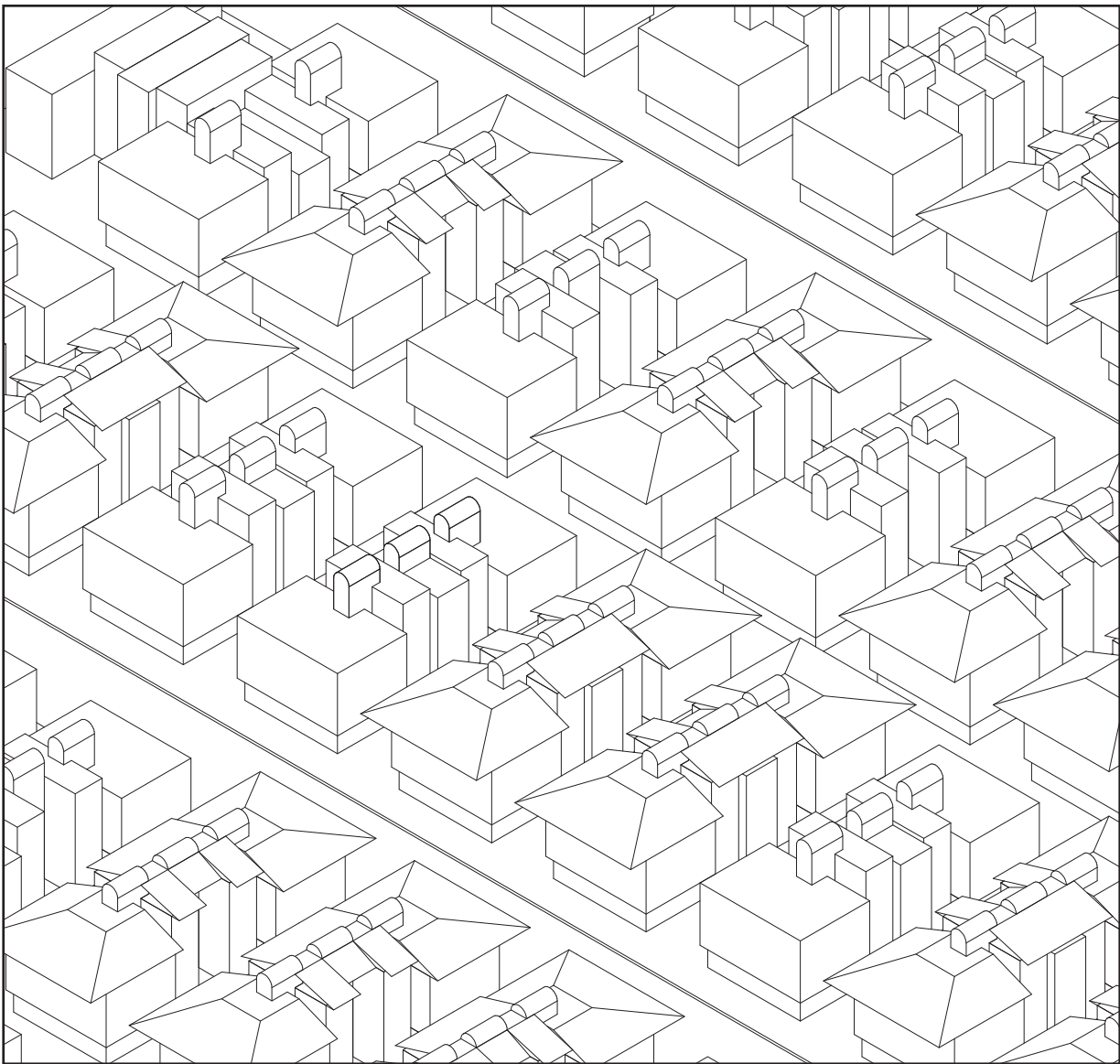
- Village house



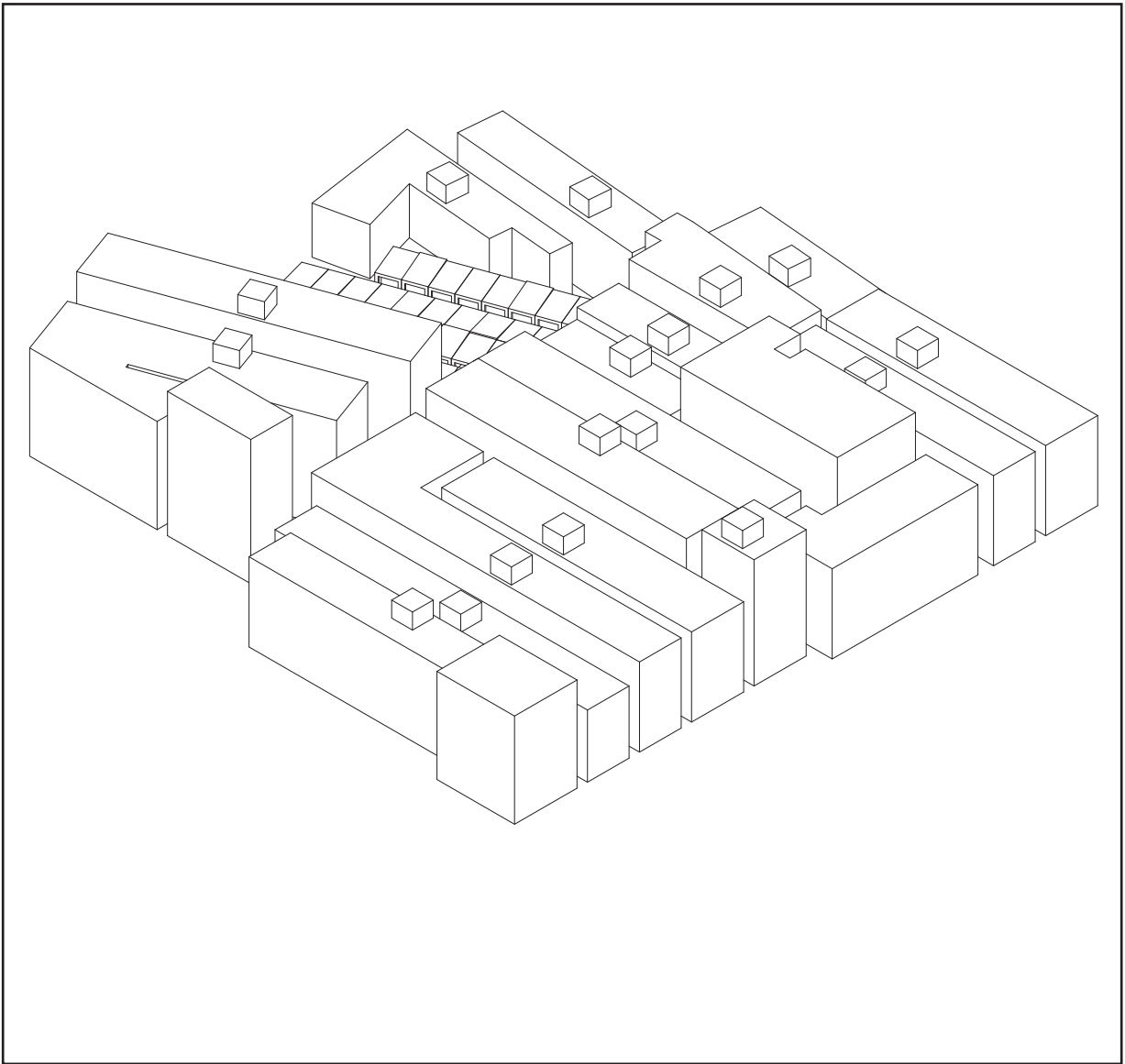
- Slum settlements



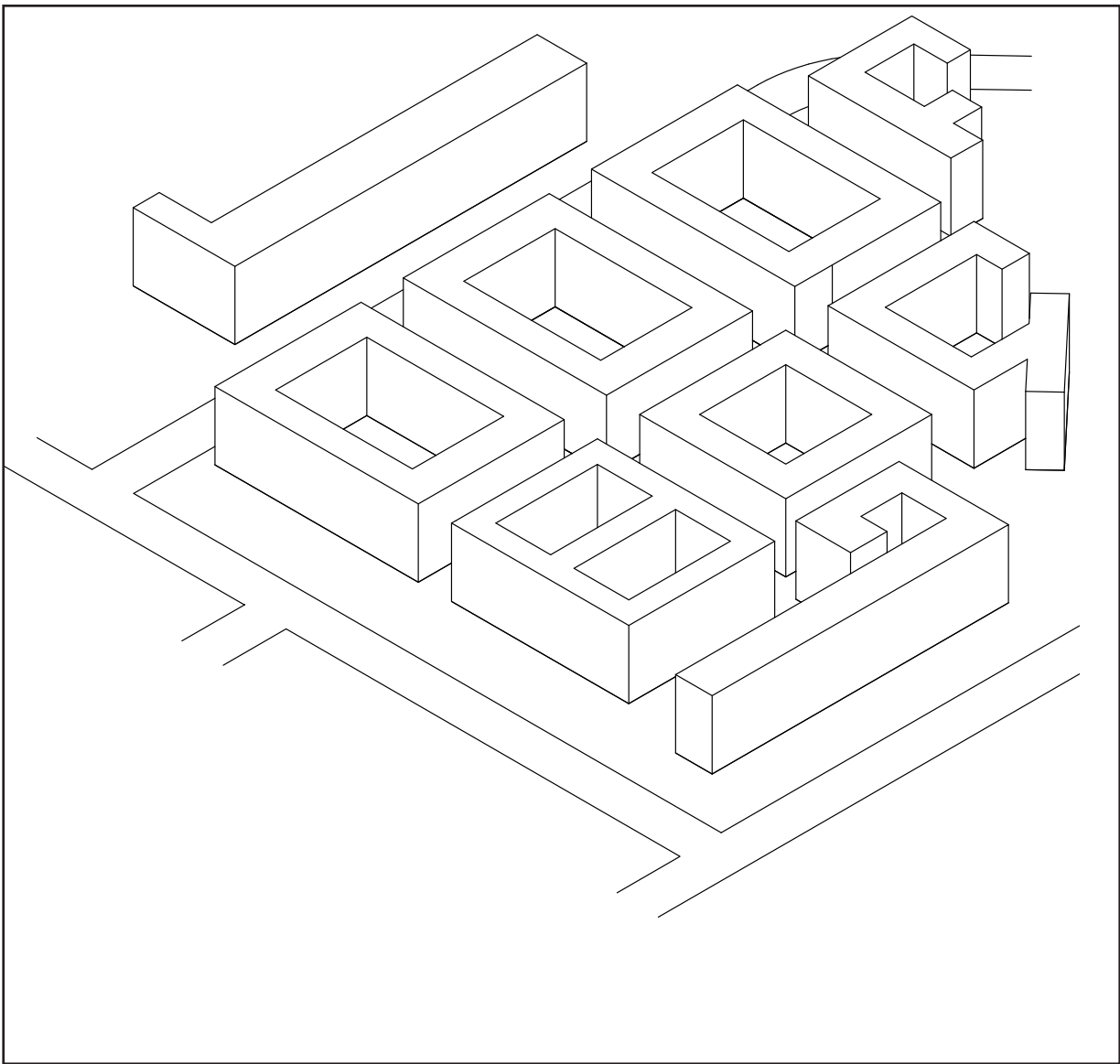
- Baithi chawl



- Low rise apartment



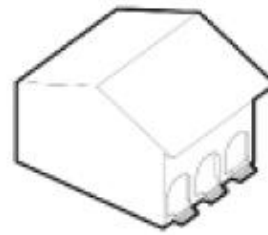
- Slum rehabilitation chawl



- Real estate apartment



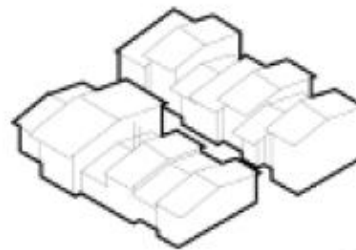
Village house



FSI: 0.9



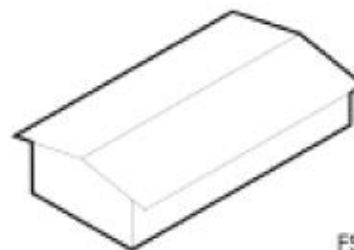
Slum settlements



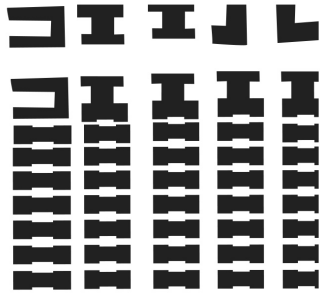
FSI: 1.7



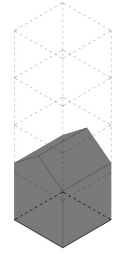
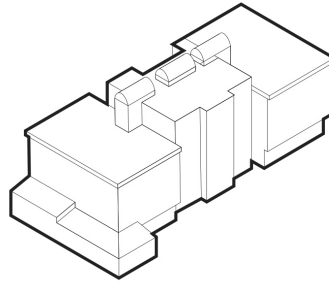
Baithi chawl



FSI: 0.85



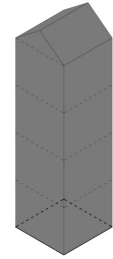
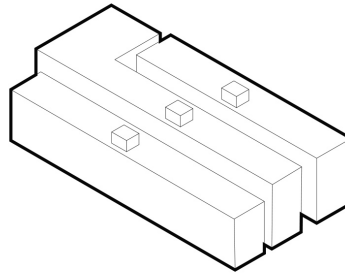
Low rise apartment



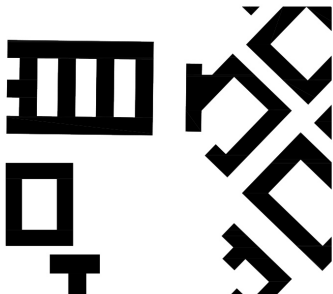
FSI: 1.2



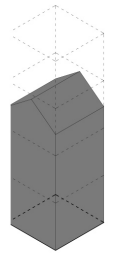
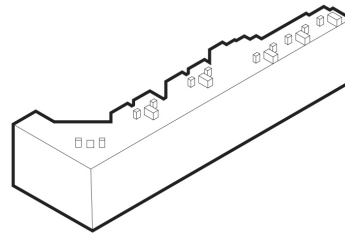
Slum rehabilitation chawl



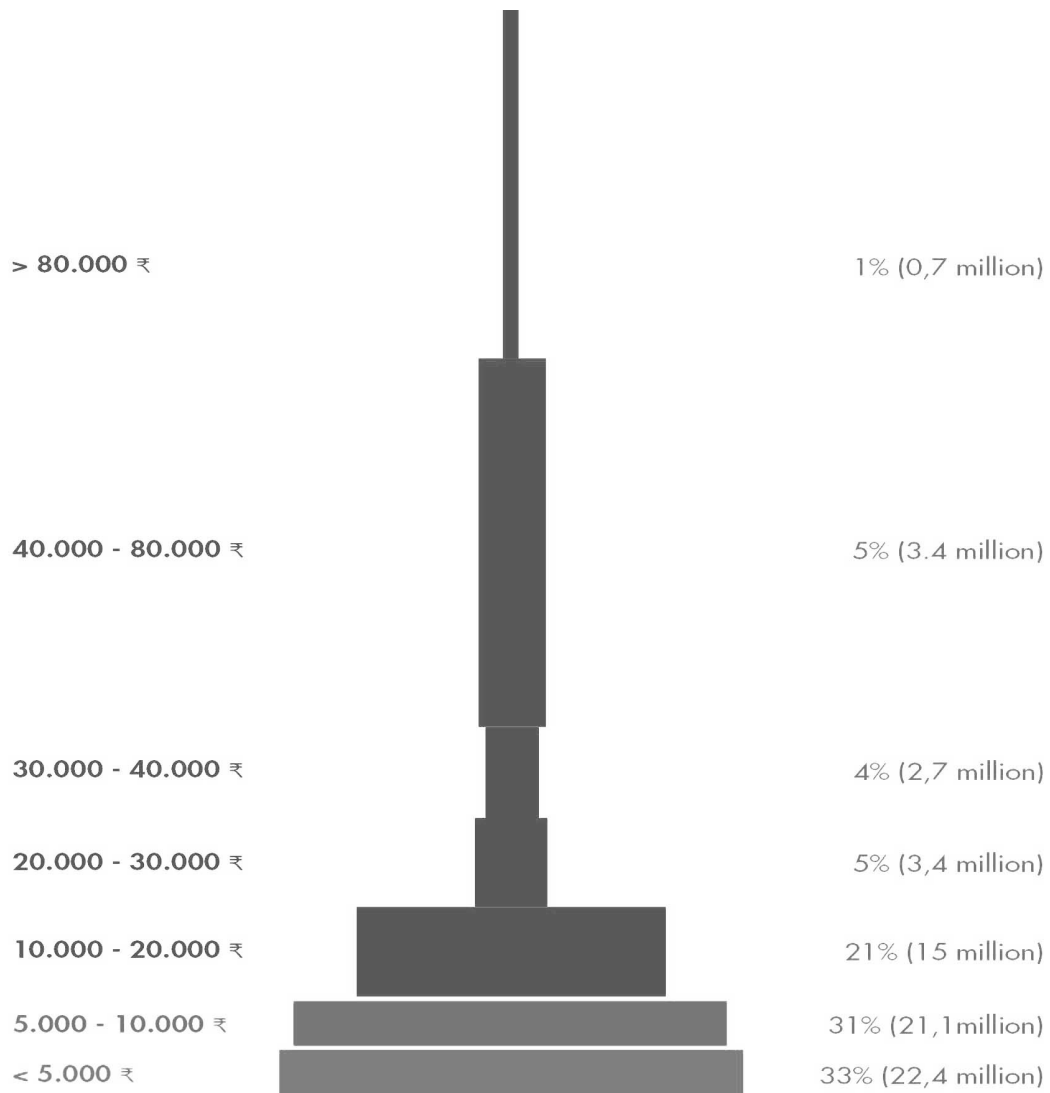
FSI: 4.0



Real estate apartment



FSI: 2.5



Income distribution
Income pyramid of urban India



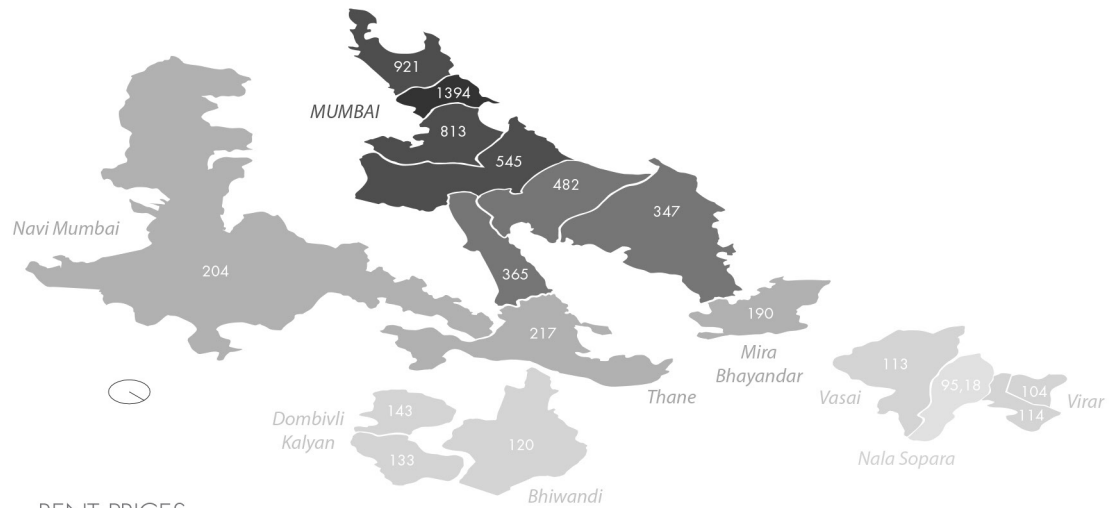
Affordability

The recent housing boom in India has been accompanied by a widening income gap across different income groups and a resultant decline in housing affordability for the lowest segment of the population.



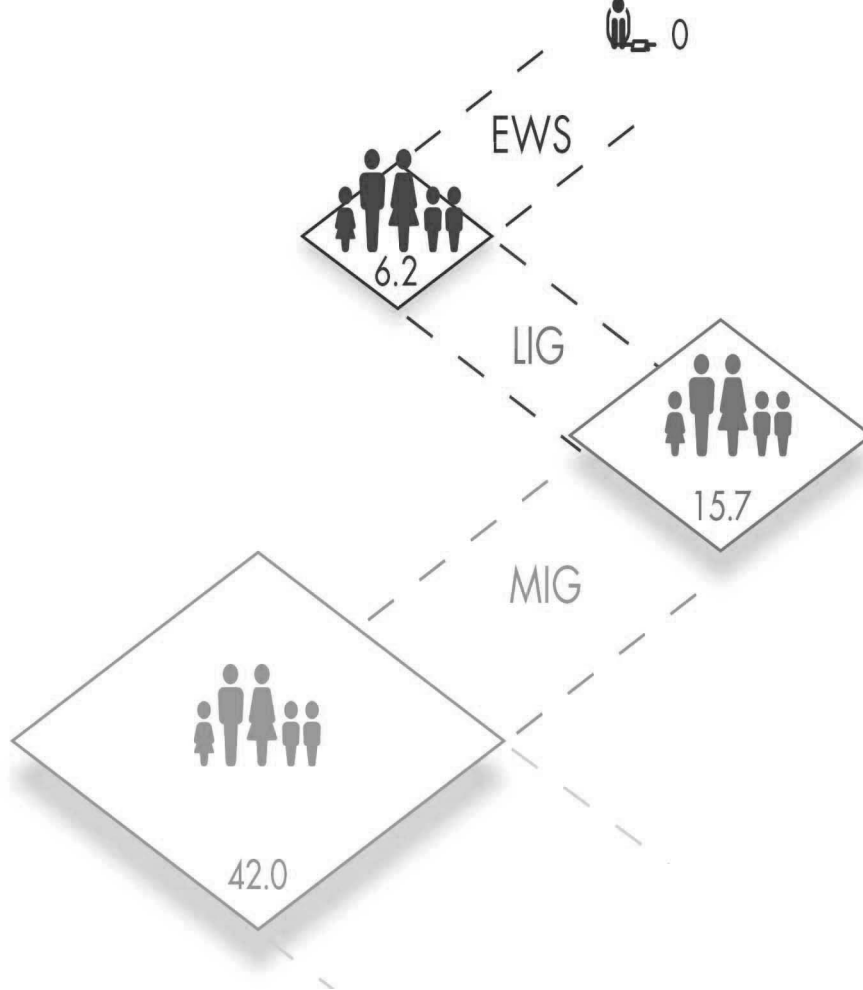
PROPERTY RATES

Property rates of residential apartments in the Mumbai Metropolitan Region in rupee/m²



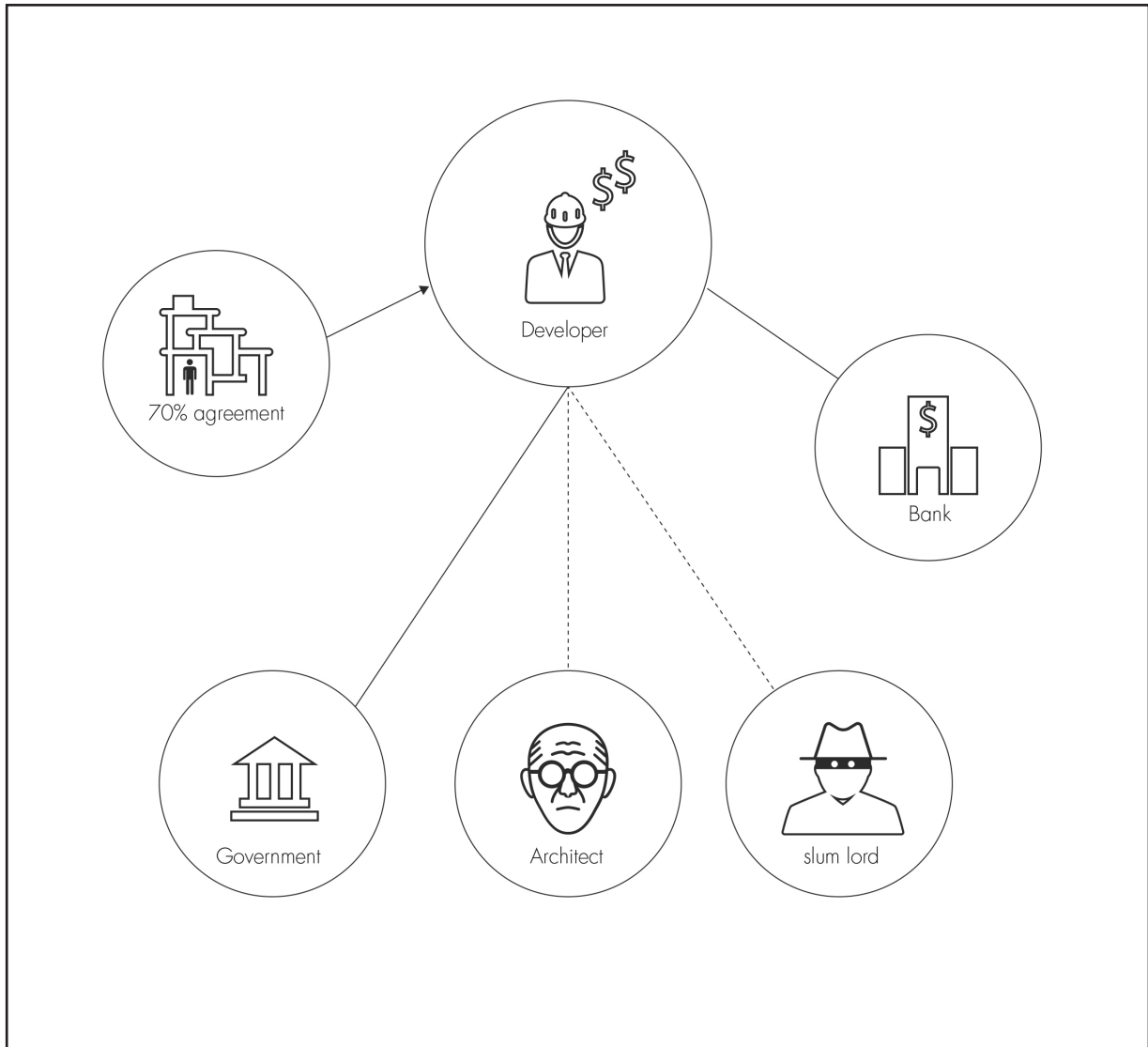
RENT PRICES

Rent prices of residential apartments in the Mumbai Metropolitan Region in rupee/m²



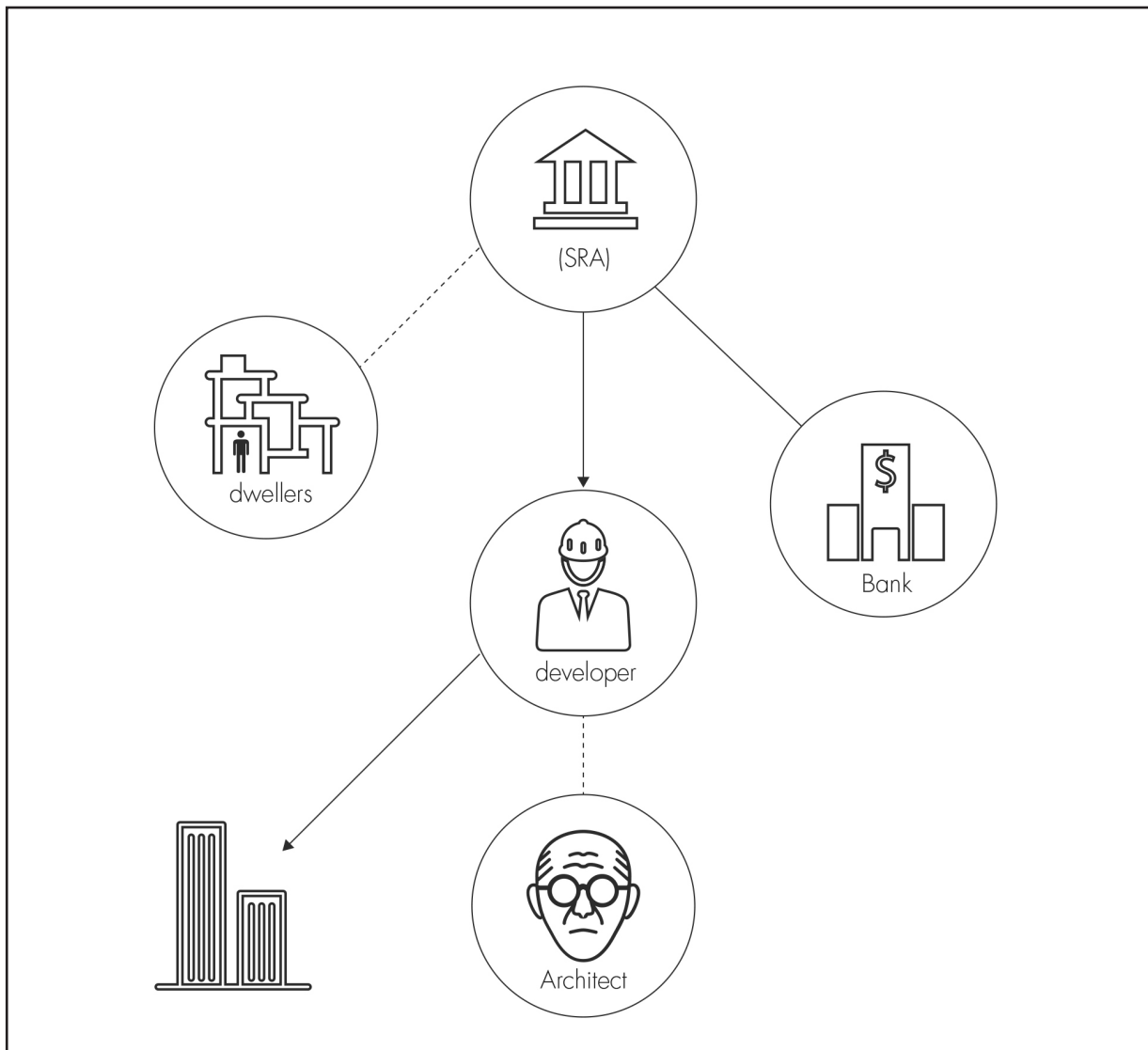
Affordable areas (m²) in Nala Sopara

This image shows how the EWS and the LIG in Nala Sopara are being priced out of the formal housing market. A rent average is used of 95.18 rupee/m² as a depiction of the current market situation of Nala Sopara. An affordability ratio of 30% is used for the EWS and the LIG and 40% for the MIG, MHIG, HIG and TIG. The average household size in Mumbai is approximately the same in slum and non-slum areas and among poor and non-poor households, with an average of 4.8 persons per household.



Slum redevelopment - Private Sector

This diagram shows the redevelopment via the private sector. In order to redevelop the slum a developer needs 70% of the people living within the area to agree with the terms of redevelopment. If this ⁷⁰ percentage is reached the developer can start the project. It then needs to collect sufficient funds from the bank and need to involve the government in order to meet certain regulations. Sometimes an ar-



Slum redevelopment- Public Sector

This diagram shows the redevelopment of a slum via the government. The government is in contact with the dwellers but doesn't necessarily need to listen to their needs. They will develop a slum area if ⁷¹ they feel it is needed. When doing so they collect sufficient funds from the bank and thereupon appoint a developer for the project. This developer then builds the new redevelopment with or without

Part Two

Research

Background:

India's expanding cities have been unable to meet the rapidly growing demand for housing especially from its low-income population. Official estimates from The Ministry of Housing and Urban Poverty alleviation indicate that urban India has a housing shortage of 24.7 million units. Over 90% of the demand comes from the economically weaker sectors (EWS) and low-income groups (LIG). With inadequate growth in the housing stock in Indian cities and no planned spaces for the urban poor, squatter and slum settlements in the city's interstitial spaces have become their default dwelling areas. While India is urbanizing at 3% a year, India's cities are urbanizing at 4% and slums are growing at 5% per year. As India's economic capital and most populous city, Mumbai has a total population of 12.44 million, 60 percent of whom live in slums. Large-scale slum proliferation is a complicated issue relevant to a variety of factors⁷.

1.1 Housing system for urban poor

"If adequate housing is not appearing in our cities it is sign that something wrong with the system. Our job is to understand the malfunction and try to set it right."

--- Charles Correa

Mumbai is among the first cities in the world that have adopted a market-dominant model to redevelop slums. Given the limited resources of local authorities, the model provides an alternative approach to handling informal settlements, an issue that many developing countries are facing. As innovative as it is, the model demonstrates several problems.

To begin with, the operation of the model starts from the direct nego-

leads to fights between developers, as they all have the desire to redevelop profitable areas. The unregulated and even vicious competition between developers also creates opportunities for rent-seeking. Secondly, the current model does not provide specific standards on the quality of rehabilitation buildings. Much discretion is left to developers. Some of the rehabilitation buildings are designed and constructed in a way that compromises the living standards of inhabitants. Some rehabilitation plots do not have sufficient amenities or open space. There is the danger that the rehabilitation buildings will become vertical slums. In addition, because of the cut-off date for eligibility of rehabilitation, the ineligible population is left with no option but to stay in unauthorized manner in slums. Many of them have to settle in a new slum after their previous slum is demolished by the government.

This list of problems led me to question this market-dominant model, and made me wonder if there are others ways to redevelop slums and provide affordable housing for the urban poor in Mumbai.

The problem with affordable housing has been about the question of how to give the most with less money. As we all know, the selling price of a real estate product consists of three things: *Land cost*, *Construction cost* and *Builders profit*.

First, I want to talk about *Builders profit*. In Mumbai, profit margin varies from 10% up to 70% in certain cases, on average, builder profit for developers is around 20 percent of the selling price of one real estate product³. This made me wonder if there is a way to cut the developers out of the process all together to lower the house price.

framework for ourselves, handle the entire design and construction process, as well as the marketing. Under an architect's guidance, residents can become clients by forming a building group in order to purchase the site that architects suggest for their particular project.

In my opinion, architects can do some things way better than just designing or constructing in Mumbai. For example, developing strategies together with building groups to achieve housing solutions with smaller scale practices that not only address today's necessities, but also indicates the future tendency when it comes to slum redevelopment for urban poor. When the government can not really accommodate large numbers of people living in slums, people can turn to figure out how to create settlements and improve their life quality by themselves, and give a bottom-up answer to the redevelopment of slums, instead of expecting and waiting for the capitalist to do something good for no reason.

We can adopt a new Building Group Model to replace the Market-dominant Model. By doing so, we can get rid of the developers and remove Builders profit. In this way we can provide the urban poor better and make cheaper housing more available.

The second thing I want to talk about is the construction costs: how can you reduce *Construction cost*?

My answer for this is incremental strategy.

The house can grow with the owner's requirements and his earning capacity. Sometimes they may even add a new housing unit and use the rent they receive to further improve their homes. Although the incremental development process of affordable housing is often called self-help housing, self-managed housing may be a more appropriate term, because the incremental development of homes typically involves labor

than high-rise buildings. Thus, the interest cost of capital tied up during construction is considerably less. High-priority construction materials is not needed anymore. Multi-story buildings must use steel and cement, commodities which are in excruciatingly short supply in Mumbai. In contrary, low-rise houses can start with bamboo and mud-bricks, and be improved over time. Moreover, maintenance is much easier on low-rise buildings. For example, the cheapest whitewash can be slapped on by a person on top of an ordinary ladder⁸.

Last but not least, the third thing: *Land cost*. Land cost is divided on the total available/consumed FSI, therefore we need to produce high-density housing for sure to reduce the cost.

To conclude, three perspectives to lower the cost of housing can lead to a concept of a new housing policy model - *Building Group Model*. In this model, architects and dwellers can get rid of developers and remove Builders profit, as well as improving the quality of the living environment.

In the documentary *Round Trip: From the city to the village*, most urban migrants don't think they belong to Mumbai city completely, even for the third generation in Mumbai. They still maintain two homes: a small crowded one in the city, as well as the one they invest in, back in the village. But we know they have to spend most of their lives in this city and the round trip from city to village can only happen one or two times a year for most urban poor families.

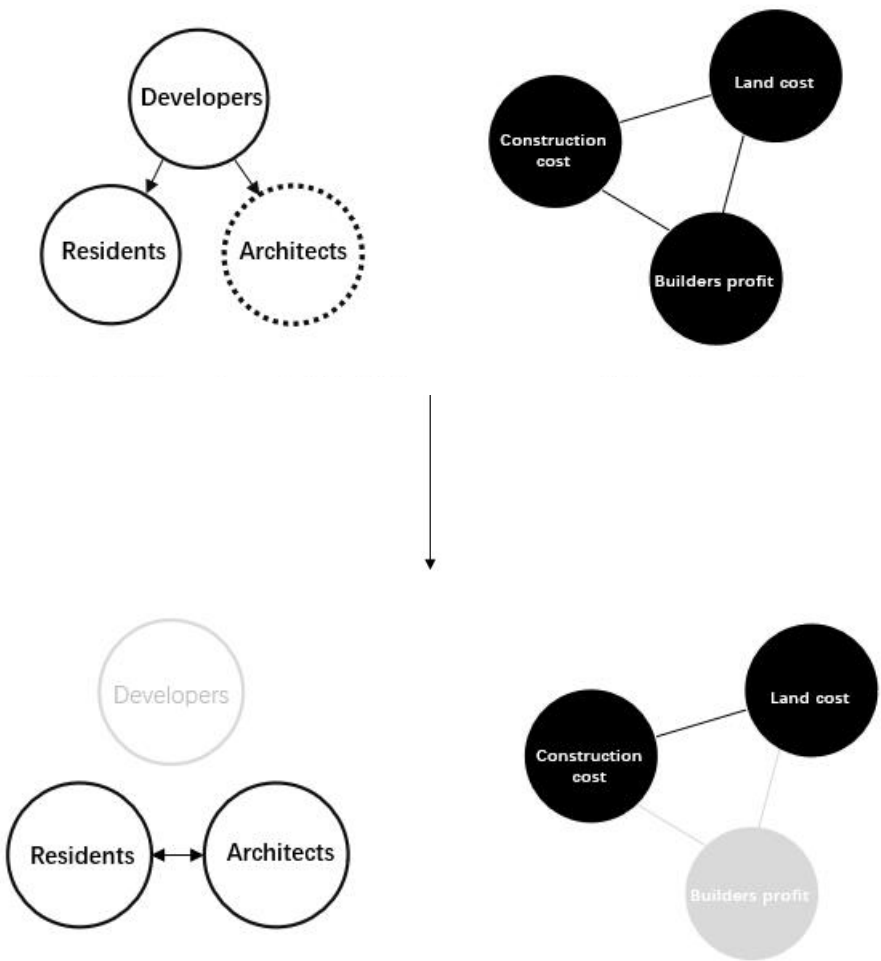
Their world evokes another narrative of imagined communities, where conceptions of home and belonging are extended beyond geographical limits. They do need an effective way to integrate themselves into the city and gain a sense of belongings.

As far as I'm concerned, besides satisfying basic human needs like accommodation and ensure basic living conditions for the urban poor, an architects' responsibility goes beyond that. Architects should help people living in slums integrate into the city both physically and psychologically. Life is uncertain and makes the people mutually dependent on each other. Urban poor in the city need an organization like a community to rely on and gain a feeling of belonging and sense of home. I believe that community-oriented housing for the urban poor is the right way to solve the problem.

The community is not like a club which has both a clear institutional framework, regulations, and rules, instead it is more open and tolerant. The community always grows naturally in an appropriate context. The old village of Nala Sopara is a community, it is an acquaintance society where people know each other and are more willing to help each other. In the old village's environment there is always space to meet and talk, to cook, to wash clothes. There is always a place for the children to play. Since the old village evolved by the bottom up mechanism, it is

With the purpose of providing decent housing for people living in Baithi Chawls and also integrate them to the city psychologically, my Research Question is: *How does the Building Group Model accomplish? a self-growing community for the urban poor in Bathi chawls of Nala Sopara in Mumbai?*

I think the Building Group Model is not only a solution to solve the issue of urban poor's housing affordability, but can also be a design strategy to develop a community for a group of people.



From Market-dominant Model to Building-group Model

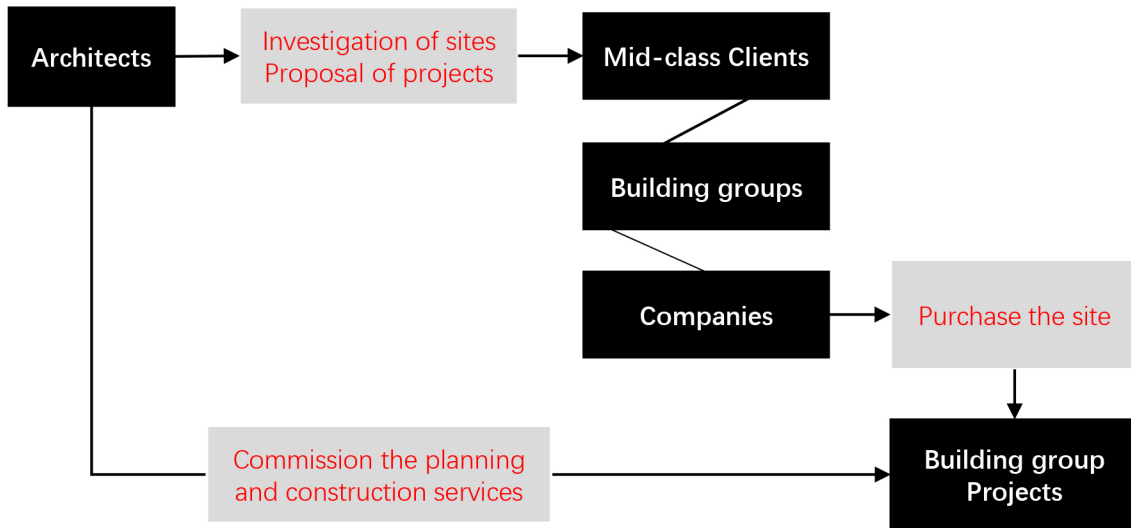
In this model, architects and dwellers can get rid of developers and remove Builders profit, as well as improving the quality of the living environment. Under the architect's guidance, or in other words under the guidance of a NPO/NGO made of architects, residents can become clients by forming a building group in order to purchase the site that architects suggest for their particular project. After that the architects can give designs according to the situation of different building groups.

2.1 Case Study of architecture without developers

SmartHoming / Germany



Under an architects' guidance, the apartment buyers become clients by forming a building group in order to purchase the site that they suggest for their particular project. The buyers in turn commission the planning and construction services together so that in addition to eliminating the building developers' margin, further savings can be achieved through volume discounts. The purchase price ultimately reflects the actual production costs⁹.



The housing system model of smarthoming

Minha Casa, Minha Vida (My Life, My House) / Entidades

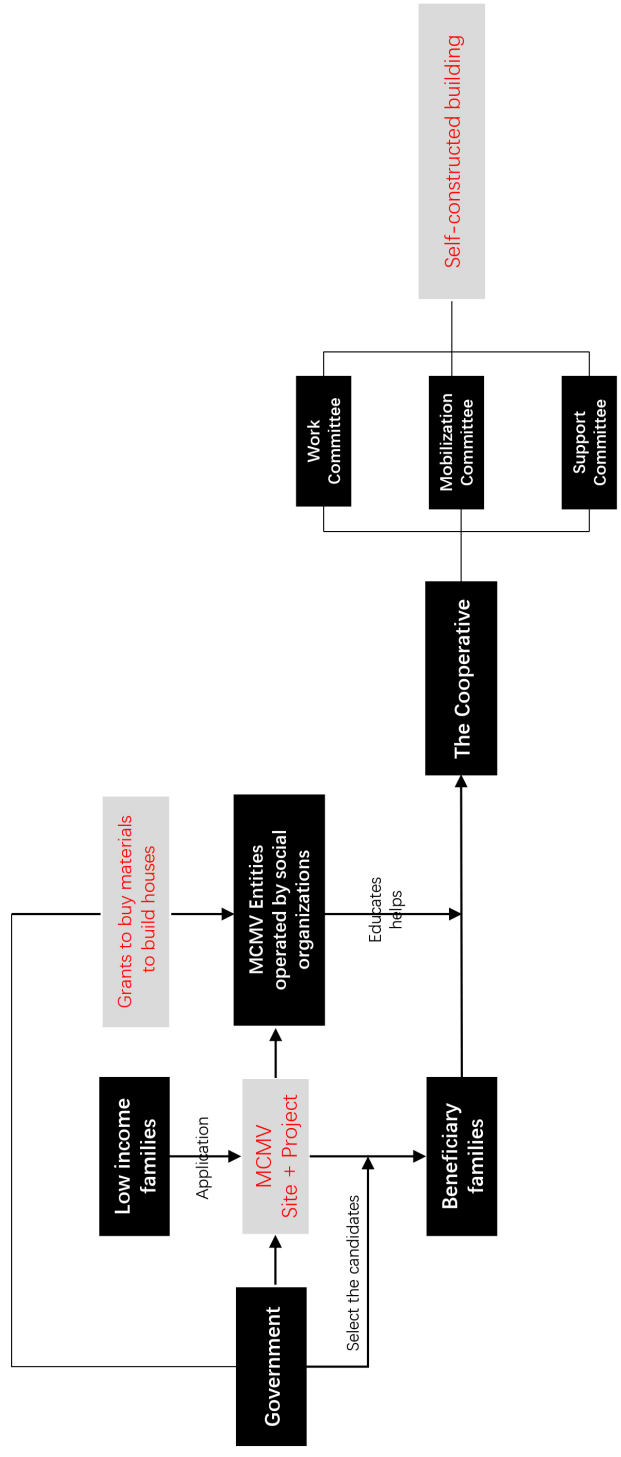


This program supports NGOs and social movements that develop social housing units through self-organization and cooperative practices among local communities.

The government offers community organizations grants to buy materials to build houses, as self-help, partly in response to the social movements that were fighting to provide better housing for people without means.

The state needs help with the funding through a structure, such as an organization that educates and helps to create entities and cooperatives that take advantage of this opportunity to create a better quality of life.

Different committees are established to coordinate the work. Work Committee/Mobilization Committee/Support Committee¹⁰

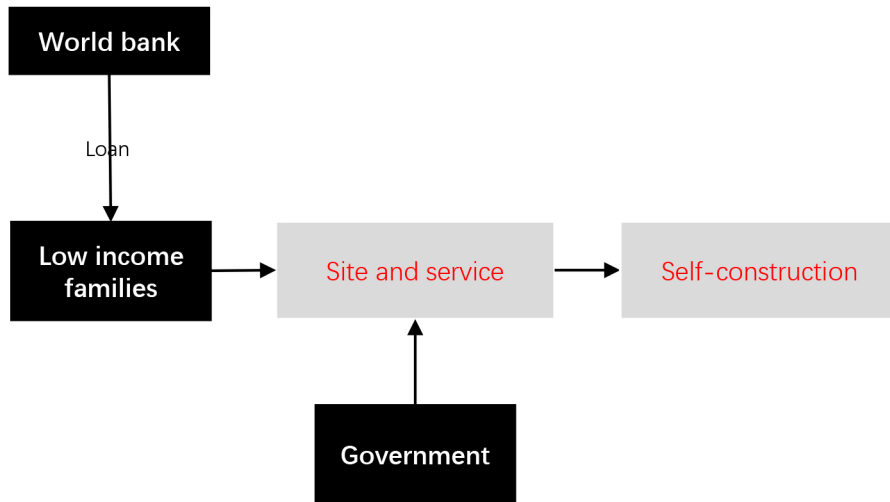


Charkop site & service scheme / Mumbai

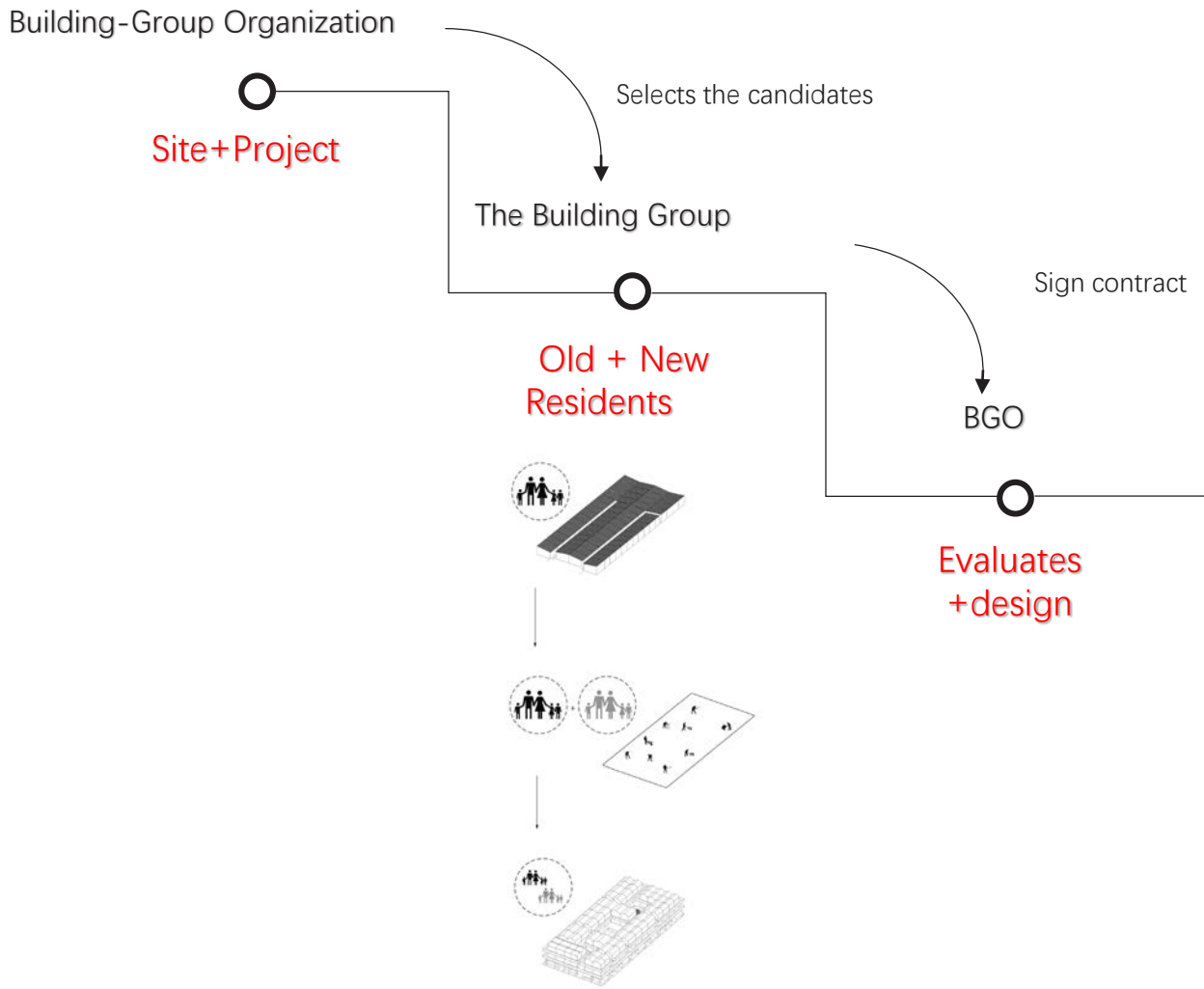


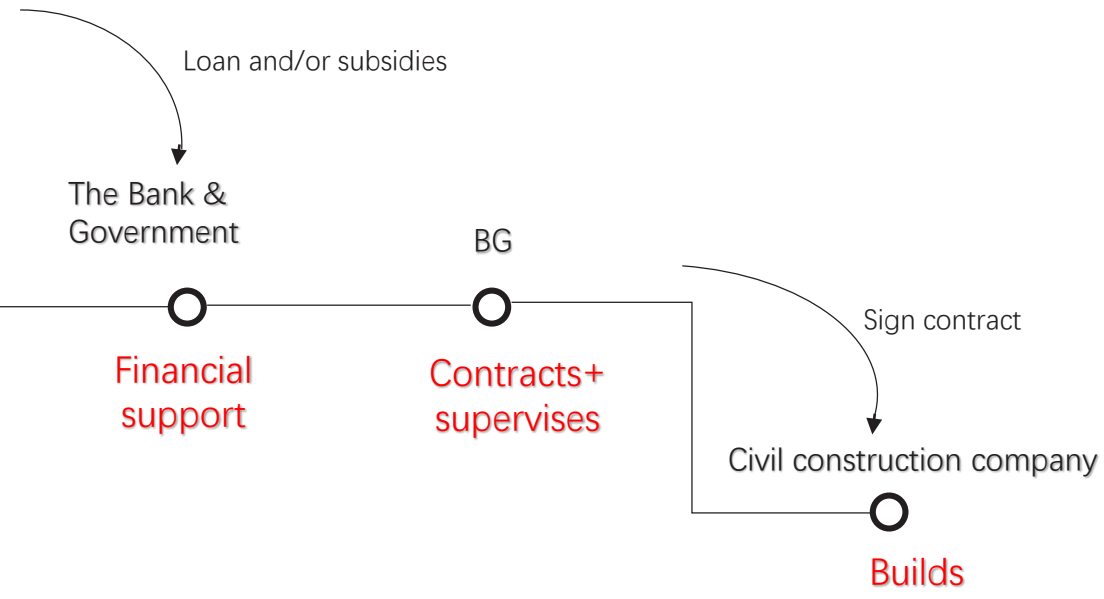
The positive aspect of sites-and-services schemes that deserves support is its recognition of the ability of people to house themselves, with a little backing from the government agencies.

Thus the role of the government changes from that of a "provider" to an "enabler". It also enables them to save scarce resources by "sharing" the responsibility of housing with the intended beneficiaries¹¹.



The housing system model of Site & Service



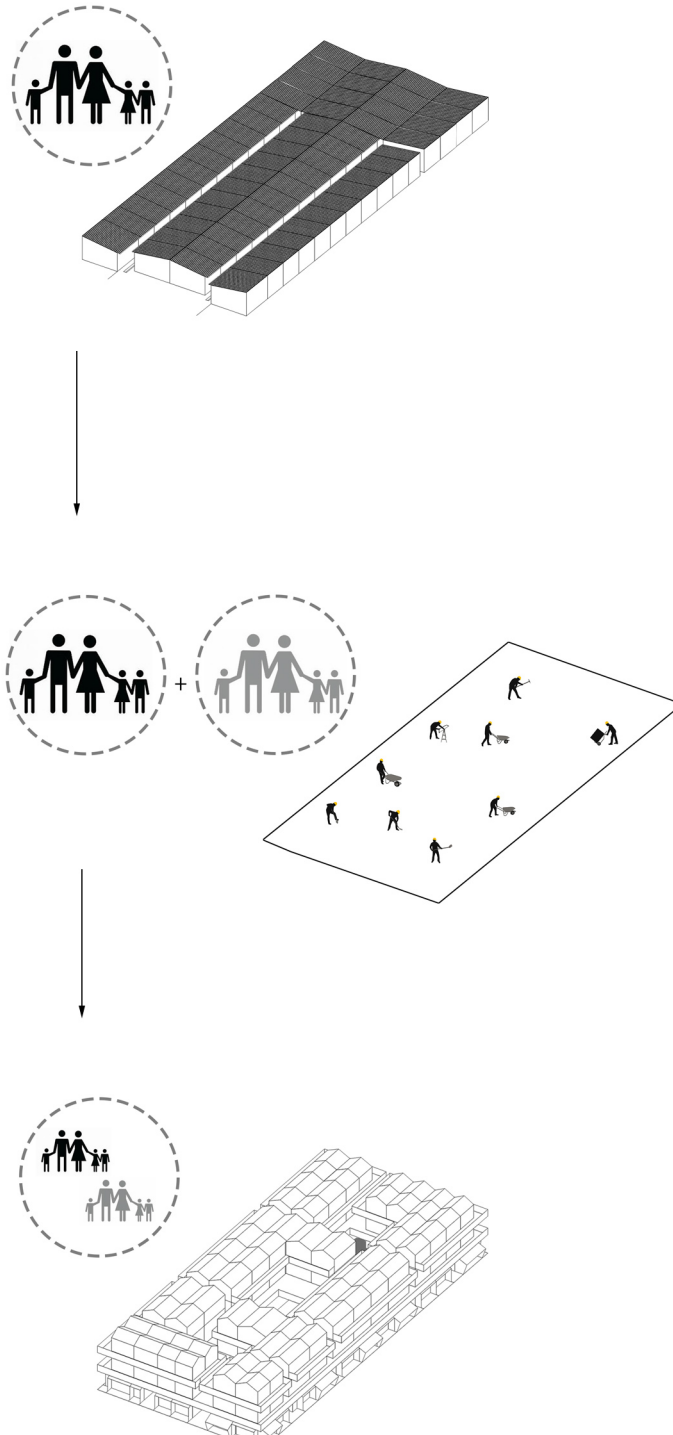


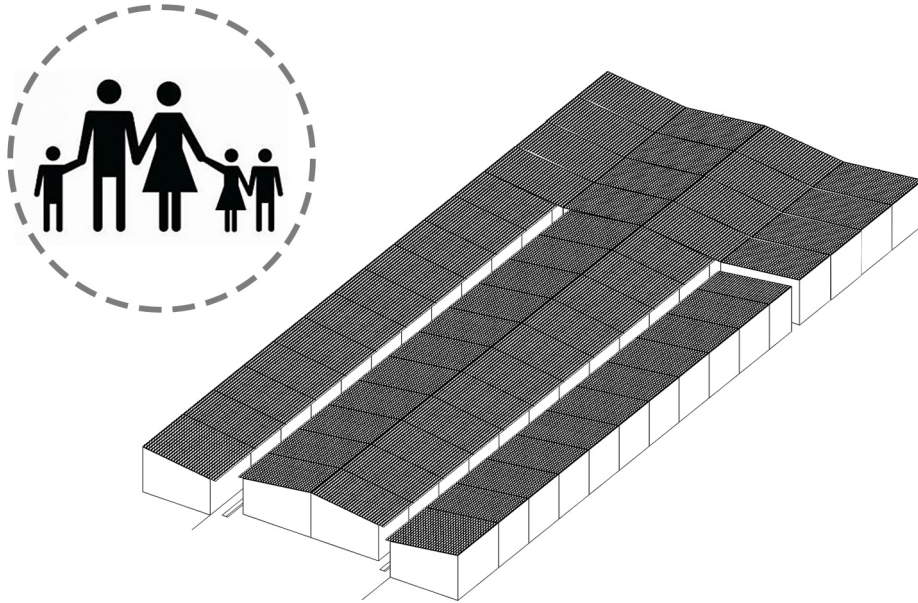
jects would give a proposal for a project of one site and put it online. LIG and MIG have access to all the information about the project. The old residents living in that particular site can apply for this program and have the priority to be selected as the candidates for a building group by the organization. Then the building group can sign a contract with the organization to entitle them to evaluate the whole project and give a design according to the building group's situation.

As for the financial support, the organization can help the building group to apply for the loan or subsidies from the government or bank, which may be more effective and efficient compared to individuals applying for money in Mumbai, especially for the urban poor.

After this, the building group can select which civil construction companies to work with and supervise the whole construction process by themselves, their participation correspond to the actual construction cost.

3.1 From the chawl community to building-group community

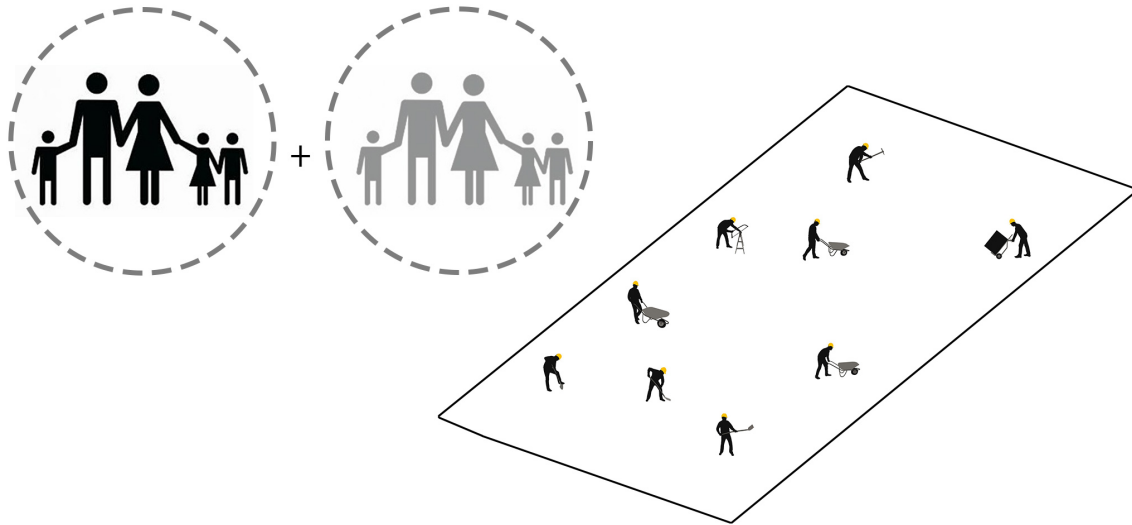




The Chawl Community

Original inhabitants living in same Baithi Chawls area have stable social interaction with each other, the chawl community has been evolving. Although the community set up is in a low income group, it has been maintaining a dignified and a safe living environment.

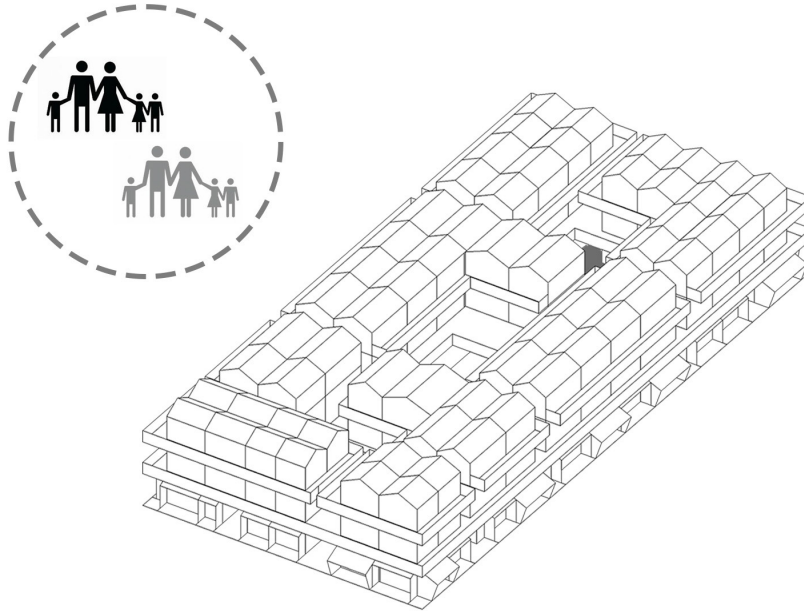
The Chawl community revolves around the concepts of living together, sharing things which are personal and understanding neighbors in deprived spaces⁹² of inappropriate proportions.



The Building up Group

The Building Group is made up of original inhabitants of the same chawl community. Also, a certain amount of residents' friends or relatives can join in the group to purchase the land together, and take charge of design and construction processes themselves with the guidance of architects.

Community networks are formed and consolidated through the process of design and construction with the Building Group system. The cooperative model strengthens the social and economic relationships amongst neighbors and facilitates the establishment



The Building-up Community

According to different sizes of the Building-up Group, various social spaces for the new community will be created in the new residence. Also, considering the various occupations and background of the Building-up Group's members, mixed-use community space should be created to meet the needs of religion, commerce and education.

Architectural elements identified from local community space in Mumbai, such as courtyards, balconies, by-lane, place of worship and so on, can be added to new house typologies to design the Building-up Community.

The dwellers participate through the whole design and construction process and can really have a say during the whole project. There are two main benefits: one is that the building group can take charge of and manage the budget of the house cost, the other is that the design can be given according to residents' needs and requirements.





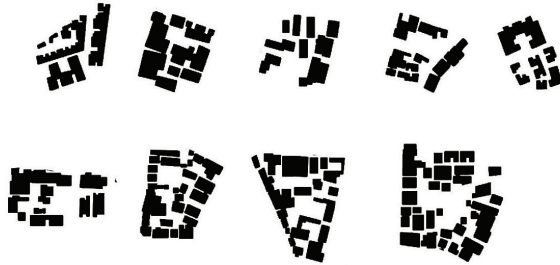
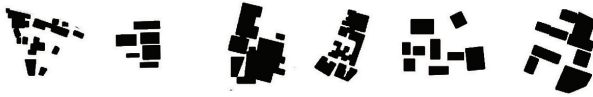
Identified clusters by shared courtyard spaces



Different sizes of communities



Small
community



Medium
community

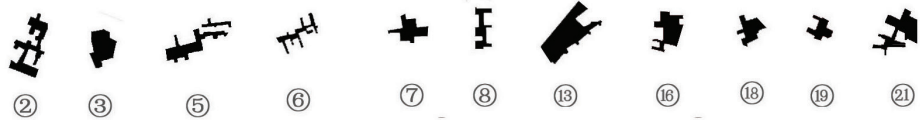


Big
community

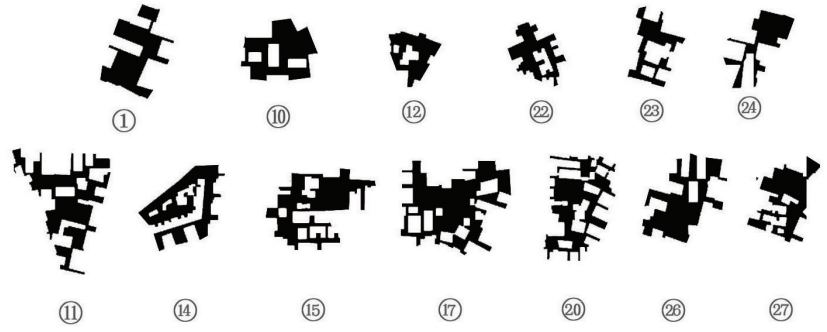
From small communities to big communities



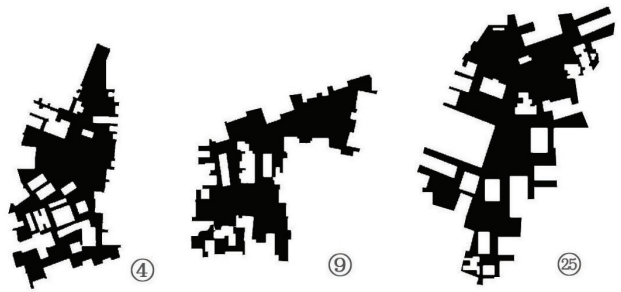
Small
social space



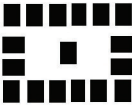

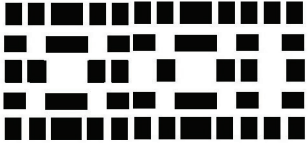
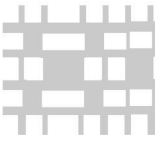




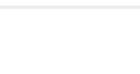
Medium
social space



Big
social space



Community	Building Group	Community Structure	Graphic pattern
SMALL	5-20 Households		
Medium	30-60 Households		
Big	70-100 Households		

Quantity of open space	Quantity	Complexity	Quality
	a few	easy	small social space lack of public facilities Strong sense of belonging
	a lot	doable	adequate social space sound public facilities Strong sense of belonging
	several	difficult	adequate social space sound public facilities weak sense of belonging

1. Correa, C. (1989). *The new landscape: urbanisation in the third world* (pp. 75). London: Butterworth Architecture.
2. CometMediaFoundation (2012, August 22). *One space, two worlds* [Video]. Retrieved from <https://www.youtube.com/watch?v=N82Dvb-MPMAk&>
3. CometMediaFoundation (2012, August 22). *One space, two worlds* [Video]. Retrieved from <https://www.youtube.com/watch?v=N82Dvb-MPMAk&>
4. Correa, C. (1989). *The new landscape: urbanisation in the third world* (pp. 72). London: Butterworth Architecture.
5. Padora, S., In Dore, M., & In Shetty, M. (2016). *In the name of housing: A study of 11 projects in Mumbai*. Mumbai: Urban Design Research Institute.
6. URBZ (2016, July 5). *Round Trip - from Mumbai to Ratnagiri* [Video]. Retrieved from <https://www.youtube.com/watch?v=gwfaHfOCUos>
7. Economy of India. (n.d.). In *Wikipedia*. Retrieved November 6, 2017, from https://en.wikipedia.org/wiki/Economy_of_India
8. Correa, C. (1989). *The new landscape: urbanisation in the third world* (pp. 49-51). London: Butterworth Architecture.
9. SmartHoming. (n.d.). *Liebigstra e 01, Berlin-Friedrichshain*. Retrieved December 11, 2017, from <http://www.smarthoming.de/de/projekte/li01/info>
10. Angelil, M., In Hehl, R., ETH Zurich, & FCL. (2014). *Minha Casa - Nossa Cidade! Innovating Mass Housing for Social Change in Brazil* (pp. 64-65). Berlin: Ruby Press.
11. Padora, S., In Dore, M., & In Shetty, M. (2016). *In the name of housing: A study of 11 projects in Mumbai*. Mumbai: Urban Design Research Institute.

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